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Waste Material Dealers Convene In Chicago

Dr. David Friday, Well Known Economist, Discusses Outlook for Prices, Production and Profit At Annual Banquet—Paper Stock Division Decides to Merge With Newly Formed Waste Paper Institute, Which Becomes Section of National Association—Carlton B. Overton Re-Elected President for Ensuing Year

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., March 21, 1931.—More than 300 members of the National Association of Waste Material Dealers from all parts of the United States went into various business sessions of their eighteenth annual meeting program which was held at the Congress Hotel, Chicago, on March 17 and 18. The division which is of the most importance to the paper industry is, of course, the Waste Paper Division, and it is to the meeting of that group on the afternoon of March 17 that the interest of the paper industry was directed.

The session was called to order by the chairman, W. R. Bulger, and the large group of waste paper dealers immediately went into the important discussion as to whether or not the division would align itself with the newly formed Waste Paper Institute. After some discussion the Waste Paper Division of the National Association of Waste Material Dealers decided to merge with the Waste Paper Institute, which means that there will be no further Waste Paper Division, but that the Waste Paper Institute will now be a part of the National Association. This move, it was felt, will give the waste paper dealers even further opportunity to align themselves as an important factor in the present economic world, and a greater chance to do many things that should promote the prosperity and further development of the waste paper industry.

Benjamin Schwartz Addresses Gathering

Benjamin Schwartz, director general of the Scrap Iron and Steel Institute, was present at the meeting and gave to the waste paper dealers present his conception of what the Waste Paper Institute could and should do to further its best interests. Mr. Schwartz has been, even since the inception of the Institute at a meeting at the Palmer House, Chicago, last fall, more or less the guiding hand in the formation of the Institute. Conversation with members of the industry, even prior to the meeting at the Congress, indicated that the newly formed body would be patterned somewhat after the Scrap Iron and Steel Institute. Problems of the new organization will be to gain recognition of the importance of the industry, to effect a closer understanding and sympathy between all divisions of the industry and to work out ways and means of improving the position of the industry to the benefit of all members.

The newly formed Institute appointed a committee to meet with the Paperboard Industries Association to discuss the relations between the two industries, in an endeavor to work out all plans in harmonious fashion. At the same time a committee will also apply for a meeting with the Federal Trade Practice Commission some time in the future at Washington, D. C. Steps to arrange this meeting indicate that the Waste Paper Institute means business in getting recognition for the industry and in working out its problems in every detail.

Waste Paper Institute Elects Officers

Following the transacting of this important business, the Waste Paper Division session, now the Waste Paper Institute, proceeded to elect officers and an executive committee to work through the coming year. C. H. Haskins was appointed executive secretary of the Institute. Other officers include Newell J. Lewis, Pennsylvania Paper Stock Company, chairman; David Charak, Federal Paper Stock Company, vice president and John W. Winter, Winter Paper Stock Company, secretary and treasurer.

Members of the executive committee include the following: Stuart Sutphin, of the I. B. Sutphin Company, Cincinnati; Robert Johnston, General Paper Stock Company, St. Louis; Robert Graham, P. H. Graham & Sons; Andrew Costarino, Hicks-Costarino Company, who is also president of the New York Association of Dealers in Paper Mills Supplies; William McGarrity of the Penn Paper Stock Company, of Philadelphia; Nathan Kurtz, of M. B. Speer & Co.; N. D. Short, Great Lakes Paper Stock Company; M. Mautner, Cincinnati; Samuel Levine, Detroit, and Samuel Cohn, of the Omaha Waste Paper Company, Omaha.

J. V. Spachner, of the Chicago Mill Paper Stock Company was re-elected to the board of directors of the National Association of Waste Material Dealers. Other waste paper representatives nominated on the board were M. B. Speer, of M. B. Speer & Co., Pittsburgh and Robert F. Graham of P. H. Graham & Sons, Boston.

The Chicago Mill Paper Stock Company and the Pioneer Paper Stock Company, both of Chicago, maintained a reception room at the Congress Hotel for the convenience of guests. It was headquarters for a large number of waste paper dealers during the time of the convention.

Annual Banquet Well Attended

The annual banquet of the National Association of Waste Material Dealers was held at the Congress Hotel on the evening of March 18. Nearly four hundred representatives of the association and their guests were there to hear an interesting program featured by the appearance of Doctor David Friday, president of the Domestic and Foreign Investors Corporation and economic advisor

(Continued on page 68)

Demand for Paper Broadens In Philadelphia

Wrapping Paper Specialties Going Forward In Fairly Satisfactory Volume—Various Grades of Fine Paper In Slightly Better Request—Book Paper and Higher Grades of Writing Paper Moving Freely—Paper Stock Market Continues Spotty

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., March 23, 1931—Broader demand for paper marked the mid-month, as the trade has been sharing in the improvement of industry. There has been a growing distribution of various specialties in the wrapping paper division and for book papers and higher grades of writings. While the fine paper division has been slow to respond, there was a slightly better demand for small lots of printing papers. Mill agents report broadening of orders under contract, but at prices slightly under those of a year ago. Specialties used by clothing industries and manufacturers of food products have been the most active of the wrapping paper grades. Tissues, too, have followed the advance in shipments, but hold to the lower prices of the early month. Among the more active lines at this time are glassines, confectioners and bakers supplies, and outing paper goods. Corrugated and fiber containers as well as folding boxes, are among the converted lines that show indications of improvement.

Manufacturers report slight improvement. Demands of the distributors show the cautiousness of the trade in limiting requirements to immediate needs. Builders supplies are in line for slight betterment and the roofing grades, which have been particularly laggard, gave evidence of plans for resumption of building of smaller types of structures, which are forecasted. Demand for paper stock is spotty, with alternating good and poor trading days, as mills place spasmodic orders for immediate needs under rush shipments.

Paper Mill Superintendents Meet

Following the meeting of the Pennsylvania and New Jersey Division of the American Pulp and Paper Mill Superintendents Association, held last Saturday at the Yorktowne Hotel, York, Pa., announcement was made by Secretary and Treasurer J. Linville Mullin, Augustine Mills, the Jessup and Moore Company, Wilmington, Del., of the completion of the program for the convention to be held at the Yorktowne Hotel, April 24 and 25.

There was a dinner session at which various features of the program were arranged, with the following attending:—E. C. Gildenzopf, chairman; Phillip Glatfelter, president P. H. Glatfelter Company, Spring Grove, Pa.; Henry D. Schmidt, president Schmidt and Ault Paper Company, York, Pa.; S. Carrol Wentz, superintendent P. H. Glatfelter Company; George Foreman, superintendent Schmidt and Ault Paper Company; Charles Kephart, superintendent York Haven Paper Company, York Haven, Pa.; J. L. Mullins and Charles Kuhe, Jessup and Moore Paper Company, Wilmington, Del.; R. N. Watts, Cheyney Bigelow Wire Works, and W. J. Zeeland, Bird Machine Company.

Final arrangements for the convention include mill visitations, banquet at the Yorktowne Hotel, golf tournament, theatre party for the ladies, vaudeville and other entertainment, and the usual business sessions of educational and helpful aid to the members.

President Carl Magnus, of the National Pulp and Paper Mill Superintendents Association, will be a guest of honor at the banquet Thursday.

Scott Paper Co.'s Record Earnings

The year 1930 was the best in the history of Scott Paper Company, in spite of the prevailing business depression. Both sales and net reached the highest figures in the history of the company. Earnings on the common stock were also up amounting to $5.07 a share, compared with net of $4.57 a share in 1929. By means of an intensive advertising program sales were pushed steadily throughout the past year and results were reflected in an almost uninterrupted increase in total sales by months. The company has announced that it plans to increase its advertising appropriation for the current year in an effort to develop additional markets for its products which have not been completely absorbed in the past.

Earnings for 1930 totaled $986,646, compared with $893,250 in 1929, an increase of 9.5 per cent. Earnings on common, after the deduction of preferred dividends, amounted to $5.07 a share, against $4.67 a share in the preceding year, an increase of 8.4 per cent. The smaller proportionate increase in earnings per share was accounted for by the increase in common shares outstanding to 162,059 shares at the end of the year, compared with 155,840 shares outstanding at the end of 1929.

The company pays dividends on common in stock at the rate of 4 per cent annually, in addition to the regular cash dividend at the rate of $1.40 annually. Last year the company issued 6302 shares of common stock in payment of common dividends, which accounts for the increase in common shares.

Last year Scott Paper improved their financial position by a reduction in funded debt and increase in the current ratio. Funded debt was reduced to $401,000 from $417,000. Ratio of current assets to current liabilities was increased to 3.8 to 1, from 2.5 to 1 at the end of 1929. This improvement was effected by a reduction in accounts payable and accrued items, and an increase in cash, which was more than double the 1929 figure, standing at $263,854 at the end of 1930.

Lehigh Valley Paper House Moves

Removal of the Lehigh Valley Paper House Division, S. Walter, Inc., with main offices located in this city at headquarters of S. Walter, Inc., 144 North 5th street, is announced through Simon Walter, head of the firm. The new location of the Lehigh Valley Paper House Division is at 32-38 North Jordan street, Allentown, Pa. The new quarters are along the Lehigh Valley Railroad and provide for extension of business in the Lehigh Valley section. The Lehigh Valley Paper House Division distributes fine papers, as well as wrapping grades, featuring Hammermill, Artesian Bonds, and others.

Sylvester S. Garrett Visits Gulf Section

Sylvester S. Garrett, directly descended from the pioneer paper manufacturing family of Garretts, for more than a century linked with Pennsylvania industry, and head of the firm bearing his name, left last week for the south, where he will be the guest of a prominent southern paper maker in a cruise off the Gulf section. He is accompanied by his son, William N. Garrett, and will remain in the southlands for the next three weeks visiting New Orleans and other points.

Paper Manufacturers to Confer With Box Makers

The owners and managers of paper board mill supply trade to the set-up box manufacturers, together with the members of the glazed and fancy paper trade, have been invited to hold conferences at the Wardman Park Hotel, Washington, D. C., concurrently with the Annual Convention of the National Paper Box Manufacturers Association to be held May 27 to 29. The following paper men have been appointed by President Paul Kroeck, of the National Paper Box Association, to arrange for the annual convention:—W. W. Langtry, District of Columbia Paper Manufacturing Company, Washington, D. C.; Charles Matthias, Matthias Paper Corporation, Philadelphia, Pa., and Thomas Ross, A. M. Collins Manufacturing Company, Philadelphia.

This committee will meet at the Wardman Park Hotel March 28 to complete arrangements for exhibits of supplies to provide for a trip to the mill of the District of Columbia Paper Manufacturing Company, and other features of the supply division program.

Moore and White Rebuild Scott Paper Co. Machines

C. J. Curran, chief engineer of the Moore and White Paper Company, manufacturers of paper making machines and equipment, left last week for Chester, Pa., where he will direct the rebuilding of the No. 11-90-inch paper making machine, which is to be enlarged to 180 inches of the high speed type. The Moore and White company installed the original machine in the plant of the Scott Paper Company and has built three of the speediest machines with world record production output in tissues for the firm.

B. M. Clark Succeeds A. Harry Goebel

B. M. Clark has succeeded the late A. Harry Goebel as manager of the tissue and papeteries department of the Garrett-Buchanan Company, 18 South 6th street. The new manager was assistant to the late executive, who died recently after a brief illness from pneumonia.

Representing the Garrett-Buchanan Company in the territory south of the Mason and Dixon Line, Howard W. Roe will cover Baltimore, Norfolk and surrounding sections. He was formerly connected with the B W. Wilson Paper Company, Richmond, Va., and the firm of Dobler and Mudge, Baltimore.

Paper Men Return From South

President Morgan H. Thomas, of the Garrett-Buchanan Company, and Vice-President William A. Hentz, of the D. L. Ward Company, who have been sojourning in Florida resorts and Bermuda respectively, returned to their desks this week.

Atlas Shopping Bag Co. Moves

The Atlas Shopping Bag Company, formerly located at 231 South 2nd street, has removed to larger quarters on the fourth floor of the building at 13th and Hamilton streets. The firm manufactures the Atlas line of shopping bags for the trade and for large consumers.

The recently reorganized Matthias Paper Corporation, formerly the Matthias and Freeman Paper Company, 143 North 5th street, has distributed samples of its newest assortments of fancy box tops in the Sun Rise grades made for its special distribution among the trade.

New Tissue Roll for Peerless Paper Mills

Philadelphia wrapping paper dealers have been introduced to a new tissue sanitary roll by the Peerless Paper Mills, of Oaks, Pa. This new product is of high grade texture and of white only, and is produced specially for consumers who require a higher class product than usual.

Pusey and Jones Bulletin on P. H. Glatfelter Company

Following the recent dinner given at York Country Club, York, Pa., by the P. H. Glatfelter Company, to representatives of manufacturers and builders who contributed to the construction and installation of the new units and mill addition to the Spring Grove, Pa. plant of the company, the Pusey and Jones Company, Wilmington, Del., builders of paper making machines and equipment, has compiled a special bulletin, giving details of the additions. Among those who contributed to the building of structure and machines and who were entertained were: L. R. Widdicombe, Shoemaker Bridge Company, designer of the building; representative of the R. Hostter Company, Inc., building contractors; G. M. Brodley, Field Erection Staff Pusey and Jones Company; S. C. Wentz and E. F. Troop of the Glatfelter Company staff.

Schuylkill Paper Co. In New Quarters

The Schuylkill Paper Company has removed to new and larger quarters at 437 Chestnut street. The new telephone number, with increased trunk lines, is Lombard 0843.

I. P. Sells Newspaper Interests

WASHINGTON, D. C., March 25, 1931.—Archibald R. Graustein, president of the International Paper and Power Company testifying before the Federal Trade Commission last week in connection with its power hearings told of the disposal by his company of his newspaper interests in Brooklyn, Boston and Chicago.

Mr. Graustein had testified in hearings before the Commission in 1929 that his company had acquired these interests to insure a market for news print paper.

The newspapers in which the company had interests, Mr. Graustein testified, are the Chicago *Daily News*, the Chicago *Daily Journal*, the Albany *Knickerbocker Press*, the Albany *News*, the Boston *Herald Traveler*, the Brooklyn *Eagle* and the Ithaca *Journal News*.

The company's interests in newspapers are now confined to three papers in the Southeast, the Augusta, Ga., *Chronicle*, the Columbia, S. C., *Record*, and the Spartansburg, S. C., *Herald*. Mr. Graustein stated, explaining that control of these papers was acquired in the latter part of 1930. He said his organization has no intention of continuing ownership longer than until they can be conveniently disposed of. The business and editorial management of these papers are handled locally, he testified.

Testimony regarding the disposal of newspaper interests in Chicago brought out that stock in the *Daily News* was held in Mr. Graustein's name and was sold in August, 1929, either to the *News* or its executives. Present owners of the stock have no connection with the International Paper and Power Company, the witness said.

Disposition of interests in the *Daily Journal* occurred in December, 1929, he said. The Company received for its stock in the paper debentures of Market Property, Inc., which was organized just prior to the transaction in the interest of the owners of the equity in the *Journal*. The International Paper Company, subsidiary to the Paper and Power Company, now holds these debentures, he said.

Inquiry by Judge Robert E. Healy, chief counsel of the Commission, into the transaction brought out that the assets of the Market Property, Inc., consist of accounts receivable which arose out of the liquidation of the *Journal*. These assets were transferred to Market Property and then sold by it back to the *Journal*, it was brought out. The *Journal* is no longer being published, its good will and circulation having been transferred to the Chicago *Daily News*, but a tabloid, the Chicago *Illustrated Times*, is being published on the *Journal's* presses, it was brought out further. Payment of the debentures depends on the ability of the tabloid to meet its payments, Mr. Graustein explained.

Interests in the Albany papers were sold by the Paper and Power Company to Frank E. Gannett in 1929 for cash, it was brought out. The witness said his company has no interests now in Mr. Gannett's papers.

Through a subsidiary company, the Publisher's Investment Corporation, the Paper and Power Company owned a one-half interest in the Boston *Herald Traveler*. This interest, Mr. Graustein testified, was sold for cash in December, 1929, to the old interests in the *Herald*. The name of the paper was later changed to the Boston Herald Traveler Corporation, some of whose directors were formerly directors in the Paper and Power Company. None of them is a large stockholder in the company, he said.

The company's interests in the Brooklyn *Eagle* were disposed of in December, 1929, to Frank E. Gannett, as was also the case with the Ithaca *Journal News*, according to testimony.

Negotiations for other newspapers which were pending at the time Mr. Graustein previously testified before the Commission have been abandoned, he said.

Northern New York Superintendents to Meet

The spring meeting of the Northern New York Division of the American Pulp and Paper Mill Superintendents Association will be held at the Hotel Syracuse, Syracuse, N. Y., Saturday, April 18. Papers and discussions of special interest will be presented at this meeting and a large attendance is expected. More details regarding the program for the meeting will be announced at a later date.

Boston Paper Merchants Hold Annual Meeting

Albert R. Smith Re-Elected President and Charles A. Esty Vice-President of Boston Paper Trade Association for Forthcoming Year—Governor Joseph B. Ely and General Smedley D. Butler Principal Speakers At Annual Banquet

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 23, 1931—Attendance at the 45th annual meeting and dinner of the Boston Paper Trade Association at the Algonquin Club Wednesday evening was among the largest on record for gatherings of the association. Two notable guests, the Hon. Joseph B. Ely, Governor of the Commonwealth, and General Smedley D Butler, of the United States Marine Corps, were the speakers of the evening. A reception preceded the banquet. During the dinner an orchestra furnished music. At the head table were Albert R. Smith, president, Governor Joseph B. Ely, General Smedley D. Butler, Charles A. Esty, W. J. Raybold, Floyd H. Blackman, T. Harry Casey and F. Bendel Tracy.

Business Meeting

President Albert R. Smith, who presided throughout the evening, opened the brief business meeting, held after the dinner. It was voted to dispense with the reading of the minutes of the previous meeting. The report of the secretary, F. Bendel Tracy, was accepted. All present stood while the names of members who had died during the year were read: Col. J. P. Jordan, W. D. Judd, and Perry B. Von Olker. The report of the treasurer, Thomas H. Casey, which showed the association in very good condition, was read and accepted. The following were elected to active membership in the association. Robert W. Lockhart, of the Von-Olker Snell Paper Company, Boston, proposed by Joseph D. Snell; Constant Southworth, of the Hampshire Paper Company, South Hadley Falls, Mass., proposed by Charles S. Proctor; Harold C. Upham, of the Hollingsworth & Whitney Company, Boston, proposed by Marry C. Thayer; Gardner W. Very, of the same firm, proposed by Mr. Thayer. Special membership—Gordon Blanchard, Crocker-McElwain Company, Holyoke, Mass., proposed by John H. Brewer; Walker Holmes, of the same firm, proposed by Mr. Brewer, and Everett F. Howarth, Linton Bros. & Co., Fitchburg, Mass., proposed by Norman Harrower. The report of the auditor, Charles H. Wood, was read and accepted.

The following officers were elected for the ensuing year: President, Albert R. Smith; first vice-president, Charles A. Esty; second vice-president, Frank B. Cummings; treasurer, Thomas H. Casey; secretary, F. Bendel Tracy. Executive committee—Norman Harrower, Charles W. Fields, W. Edwin Porter, Jr., and William N. Stetson, Jr. Arbitration committee—George W. Wheelwright, Arthur E. Ham and Arthur L. Hobson. Auditor—George D. Allen. All were re-elections except the auditor.

Governor Ely Addresses Gathering

In presenting Governor Ely, President Smith noted that ever since the organization started, annual meetings with few exceptions, had been honored by the Governor of the Commonwealth. Governor Ely expressed his delight at the despatch of the business meeting and wished that it might be possible in the administration of the affairs of the Commonwealth. He complimented the treasurer on his report. He noted that the paper business was one of the stable and fundamental industries in the United States and whether red ink or blue ink was used at the end of the year it must be written on paper and that sometimes he suspected more paper was used when business was poor.

In stressing his idea of the need of legislation for public works, the Governor said that he obtained it from the President of the United States who in 1921 was Secretary of Commerce and in his report stated that the extension of the public works program was the sensible course to pursue for relief of unemployment and stimulation of industry, "so," he added, "I appeal to you with an excellent authority." He emphasized the need of new highways, bridges, and work on hospitals and jails. The work on jails is particularly pressing, he urged, in noting the crowded condition at the Charlestown jail. The work on the Norfolk prison camp should be completed as well as that on the super-highway

PICTURE TAKEN AT THE ANNUAL DINNER OF THE BOSTON PAPER TRADE ASSOCIATION

between Boston and Worcester, of which only five miles has been built." He urged that the State would pay for unemployment either in one form or another by a dole or taxation for public works. In closing, the Governor said, "I am not actuated by a desire to spend the tax payers' money. I am actuated by my desire to help and relieve an unfortunate and distressing situation."

General Butler Discovers Crime

Gen. Butler agreed with the Governor and favored action on employment in building public works. Discussing his subject, "The Crime Problem," he related some of his experiences as director of public safety in Philadelphia. He noted that before he began his work there the political and police subdivisions of the city were one and the same thing. He said "no big criminals will stay in a city that is cleaned up. They must have a place to hang out. Crime is organized and motorized." He described some of the methods of criminals and related the capture of several crooks. He stressed the importance of co-operation all over the country and the need of an Interstate Commission of Police.

Those Who Attended

Among those present were: George D. Allen, Harold A. Allen, George C. Andrew, Sumner B. Andrew, Arthur F. Bell, E. D. Bement, W. W. Binford, Robert Bishop, Floyd H. Blackman, John F. Blackman, Gordon Blanchard, Graham Blandy, 2nd, John H. Brewer, Arthur E. Brigham, Wayne A. Brown, General Smedley D. Butler, R. H. Campbell, Albert P. Carter, Hubert L. Carter, Winthrop L. Carter, R. B. Case, Herbert J. Casey, T. Charles Casey, T. Harry Casey, Paul D. Caskey, Howard E. Chase, Asaph Churchill, Earl S. Clark, Nathan S. Clark, Ralph L. Day, C. F. Dole, Albert M. Eaton, Harry Ellis, Governor Joseph B. Ely, Robert W. Ely, Gordon E. Emerson, Irving N. Esleeck, Charles A. Esty, Walter F. Evans, R. D. W. Ewing, Arthur F. Fay, Paul S. Fiske, H. C. Fowler, John L. Gibson, Thomas C. Greene, A. C. Hall, C. S. Hall, Arthur E. Ham, A. Lawrence Ham, Herbert C. Ham, James L. Ham, C. W. Harvey, Allan I. Hatfield, Edgar P. Hay, William H. Hilton, Arthur L. Hobson, John L. Hobson, Herbert B. Hollis, Joseph E. Holmes, Walker B. Holmes, F. J. L. Hoss, Everett F. Howarth, Ralph N. Humes, Hartley A. Hurlbert, John E. A. Hussey, J. Wesley Joslyn, F. A. Juckett, Frederick H. Keep, John Kelley, Fred B. Korbel, Carl E. Lincoln, Herbert A. Lindenberg, E. H. Little, Wm. B. Livermore, Hubert W. Lockhart, Royden Loring, Willard H. Loud, Erving F. Lowe, E. R. Lyman, M. L. Madden, Russell S. Madden, Wallace B. Marston, R. B. McDougall, Wm. J. McLellan, Frank H. Merrill, Wm. J. Millane, Aaron P. Mitchell, Harry W. Morgan, Joseph A. Moses, John L. Munro, C. F. Munroe, Walter L. Muzzey, Charles W. Nelson, C. E. Newell, Vasco E. Nunez, C. R. Nutter, J. J. O'Brien, R. N. O'Neill, Maurice A. Park, A. E. Pearson, Leon M. Poore, Arthur H. Porter, W. Edwin Porter, Jr., Walter M. Pratt, Charles S. Protor, James B. Ramage, Lawson Ramage, W. J. Raybold, C. E. Rice, John E. Roach, Ralph Robinson, William Ross, William C. Ross, H. B. Sargent, Walter P. Simonds, President Albert R. Smith, Joseph D. Snell, William N. Stetson, Jr., Edward H. Stone, E H. Sussenguth, J. G. Swift, J. Gilbert Swift, Jr., Roger B. Talft, A. A. Tanyane, R. P. Teele, Harry C. Thayer, Charles W. Townsend, F. Bendel Tracy, Glen Underwood, Harold C. Upham, W. Gardner Very, John W. Vivian, H. E. Waite, C. Frederic Wellington, Charles G. Wells, Percy E. Weston, John N. Whitney, Frank H. Winter, Charles H. Wood, F. L. Wood, Wm. H. Wood, P. D. Wyman, Charles A. Young, C. I. Young, and Leon H. Young

Index Number for Pulp and Paper

Washington, D. C., March 25, 1931—The paper and pulp wholesale price index number for February was 83.1 compared with 83.6 for January and 87 for February of last year taking 1926 at 100 according to the Bureau of Labor Statistics, Department of Labor.

Increases Fourdrinier Wire Tariff

[FROM OUR REGULAR CORRESPONDENT]

Washington, D. C., March 25, 1931—President Hoover, as the result of an investigation of the United States Tariff Commission, has increased the tariff rate on all Fourdrinier wires to 75 per cent, an increase of 50 per cent over the rate carried in the present law. In connection with this investigation the Tariff Commission says:

This investigation was instituted in response to a Senate Resolution. These wires which are used for filtering mediums on paper making machines are made of finely woven brass or bronze wire cloth. The meshes in Fourdrinier wires usually run from 60 to 80 per lineal inch; the meshes in cylinder wires or facings usually run 60 and coarser. Fourdrinier wires are generally used in the production of the finer grades of paper, such as tissue, newsprint and book paper. Cylinder wires are largely used in the production of pasteboard, wrapping paper, and similar relatively coarse products. Although these wires are an essential part of paper-making machines, they are not an important factor in the total cost of producing paper, since a ton of paper is produced on the average to every square foot of wire used. The commission's investigation, which covered the year 1929, discloses the fact that Germany is the chief competing country. Substantial quantities of Fourdrinier wires also come from Austria. Importations from other countries are comparatively insignificant. The importations of Fourdrinier wires during the year 1929, when the 30 per cent duty in the act of 1922 was in effect, were approximately 18 per cent of domestic consumption; importations of cylinder wires were relatively unimportant. The rate of duty under the act of 1930 was 50 per cent and this rate has, in accordance with the commission's report, been increased by proclamation of the President to 75 per cent of all Fourdriner wires, and on cylinder wires above 55 mesh, and on woven wire cloth suitable for use in the manufacture of Fourdrinier and cylinder wires, if having more than 55 meshes per lineal inch. This increase corresponds to the difference in costs of production found to exist between Germany and the United States. The commission makes no finding with respect to cylinder wires and woven wire cloth having not more than 55 meshes per lineal inch.

Box Board Mills Consolidate

A consolidation has been effected of a number of box board mills located in the Central Western territory, into a new corporation to be known as the Central Fibre Products Company.

This group, all of which are old established paper mills and fabricating plants, consists of the Indiana Board and Filler Company, Vincennes, Ind., North Star Strawboard Mills, and Quincy North Star Company, Quincy, Ill.; Waterloo North Star Company, Waterloo, Iowa; Emerson Carey Fibre Products Company, and Hutchinson Egg Case Filler Company, Hutchinson, Kan., and the paper mills division of the Cherry-Burrell Corporation, located at Tama, Iowa, and Peoria, Illinois, and Creamery Package Manufacturing Company, located at Coffeyville, Kan.

The principal activity of the Central Fibre Products Company is the manufacturing of straw board, box board and wall board. In addition the company operates fabricating plants manufacturing egg case material, egg packing supplies and other articles of like nature.

The affairs of the new company will be carried on by the old employees, who, for many years, have conducted the separate companies. The executive officers elected are H. T. Cherry, Tama, Iowa, president; Chas. E. Carey, Hutchinson, Kan., vice-president; E. P. Lannan, Quincy, Ill., secretary and treasurer. The directors, in addition to the above executive officers are: A. W. D. Weis, Quincy, Ill.; Emerson Carey, Sr., Hutchinson, Kan.; W. D. Coil, Griffith, Ind.; H. H. Cherry, Cedar Rapids, Iowa; R. F. Davis, Chicago, Ill., and H. A. Limbert, Waterloo.

The executive offices of the new company will probably be established in Chicago.

Activities of Fox River Valley Paper Mills

Consolidated Water Power & Paper Co. May Construct Another Large Power Dam At Stevens Point—Latest Purchase of Land In Vicinity Includes 230 Acres At Big Bend In River—Prominent Mill Officials Testify At Pollution Hearing

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., March 23, 1931.—Contemplated construction of another large power dam on the Wisconsin River at Stevens Point by the Consolidated Water Power and Paper Company, of Wisconsin Rapids, Wis., is credited to the company in newspaper reports covering the purchase of land along the river. The company has made no announcement concerning its plans, however.

The latest purchase includes 230 acres of farm land at the "big bend" in the river from Frank Kieliszewski. The deal actually was made by the First Bond and Mortgage Company, of Wisconsin Rapids, Wis., for a consideration of $18,000. The investment company is understood to be close to the paper company, and credence is given the power project by a condition in the Kieliszewski transaction which stipulates that the family shall have the use of the farm until the property is wanted for a "mill pond or flooding." The river makes a hairpin curve at this point, and relocation of the river bed is considered necessary if a dam is to be built. The Consolidated company has been acquiring other flowage and river border land in the vicinity of Stevens Point for the last several years.

Reopening of Oconto Falls Mill Doubtful

Reopening of the Falls Manufacturing Company's mill at Oconto Falls, Wis., is still a matter of doubt. The mill is owned by the Continental Paper and Bag Division of the International Power and Paper Company.

It had been making wrapping and kraft papers and employed 300 workers. The mill was closed down last July and has not operated a day since. The yard is filled with wood, however, and everything kept in condition awaiting orders from New York, according to Frank Cota, manager. Competition of southern kraft mills is blamed for the shutdown, because of the advantages enjoyed in the south of cheaper labor, materials and chemicals. The mill is nearly forty years old and has machinery that is nearly obsolete. The city of Oconto Falls depends almost entirely on the mill for its employment and is hoping for early resumption of production.

Paper Mills Minimizing Pollution

Pollution, the oft repeated hue and cry of sportsmen, is now harrassing paper mill owners along the Wisconsin River, having been shifted over from its battle ground of many years, the Fox River Valley. The Tomahawk Kraft Paper Company, Tomahawk, Wisconsin, is the principal target and is accused of doing the most detriment to fish of any because of its return to the sulphate process. After reams of testimony had been taken at a public hearing at Merrill, Wis., last week jointly by the State Railroad Commission, the State Conservation Commission and the State Board of Health, the matter resolved itself back into the same old conclusions; namely, that the paper mills had taken more initiative than anybody else to minimize pollution because of the impossibility of elimination, and that the mills have worked hand in hand with the State Board of Health for years trying to overcome possible harm to fish life in the streams.

Among those who testified on behalf of the paper mills were S. B. Bugge, manager, J. A. Extrom, chemist, and C. J. McLaren, forester, of the Tomahawk Kraft Paper Company; N. S. Stone, manager of Mosinee Paper Mills company; W. J. Sullivan, manager of the Grandfather Falls Paper Company; E. P. Gleason, of the Nekoosa-Edwards Paper Company; G. S. Richards, engineer of the Consolidated Water Power and Paper Company; W. F. Thiel, of the Consolidated company; G. H. Suhs, chief engineer, Rhinelander Paper Company; L. W. Armstrong, Dells Pulp and Paper Company; S. Ekman, chemist of Rhinelander Paper Company; F. C. Boyce, superintendent of the Wausau Pulp and Paper Company; D. C. Everest, vice president and manager of the Marathon Paper Mills Company, and Allen Abrams, technical director of the Marathon company. Mr. Gleason, Mr. Richards, Mr. Thiel, Mr. Suhs and Mr. Armstrong are members of the advisory board of the Wisconsin Paper and Pulp Manufacturers Association appointed to work with the State Health Department on the pollution problem.

Other Testimony

Among other testimony given was that of tests above and below the Tomahawk Kraft company's dam with fish boxes containing captured fish. It was shown that the fish seemed to show no ill effects from the condition of the water after being kept in it for long periods.

Emphasis was also placed on the greater value the paper industry has as a medium of prosperity than as a consideration of sportsmen, and the necessity of co-operation rather than persecution in matters as difficult to solve as pollution.

News of the Industry

All officers of the Moloch Machinery and Foundry Company, Kaukauna, Wis., were re-elected at the annual meeting of stockholders and directors last week. R. M. Kanik is president, Dr. C. D. Boyd, vice president, Joseph J. Jansen, treasurer, and Hugo Weifenbach, secretary. Others on the board of directors are H. S. Cooke, L. F. Nelson, Julius J. Martens, Charles Raught and Charles Towsley.

Two hundred attended the closing dinner of the safety school at Neenah and Menasha, Wis., last week. The affair was held at the Valley Inn, with J. H. Hudson, of Chicago, as the speaker. His subject was "Wisdom and Humor with a Punch." Mr. Hudson stressed the importance of organized work and community cooperation.

At the final meeting of the safety school at Fort Edwards, conducted for employes of the Nekoosa-Edwards Paper Company, Dr. Ernest Corn, of Chicago, spoke. His subject was, "Are We Fit for Our Jobs?" The school has enjoyed a large attendance.

Since announcement that the Institute of Paper Chemistry of Lawrence College, Appleton, Wis., would erect a new building of its own this summer, equipped as an experimental mill, donations of equipment have started coming in. A cylindrical rotary boiler for cooking rag pulp has been given by the Biggs Boiler Works, Akron, Ohio. It is complete with gears and other necessary equipment, has a capacity of 100 gallons, and is worth $600. A complete set of pulp and paper testing equipment has been received from Stein-Hall Company, New York City.

Methods by which power is supplied to the Northern Paper Mills, Green Bay, Wis., from its power dams on the Menominee River were explained to members of the Rotary Club at Green Bay in an address by Harry Gochnauer, of the mill staff. The current is transmitted 80 miles over lines carrying 132,000 volts, giving the company cheap power for mills located where shipping facilities are of the best. The company utilizes its power system to operate a wireless telephone system, he said.

The death of Henry Thoms, occurring March 14 at Chicago, Ill., has been announced. Mr. Thoms was a mill superintendent for the Kimberly-Clark Corporation at Neenah and Niagara, Wis., for a number of years and later was employed by Sears, Roebuck & Co.

Outlook for Great Lakes Paper Co. Brighter

While Passing of Bond Interest Caused Surprise, Hopes Are Entertained That Interest May Be Met By May 1—Ample Profits Were Earned But Cash Failed to Reach Treasury Promptly and Money Due Was Tied Up With Minnesota & Ontario

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, March 23, 1931—Although there is no corporate connection between Minnesota and Ontario Paper Company, now in the hands of a receivership, and the Great Lakes Paper Company, both are controlled by Backus-Brooks Company, which owns all the preferred and common stock of both companies, and the relations between the two companies have been intimate. Nevertheless, in view of the announced satisfactory earnings for the first half of 1930, and the fact that the Great Lakes mill was operating five days a week in the last half, the passing of the bond interest on Great Lakes was a great surprise in Ontario paper and financial circles. Hopes that bond interest may be met by May 1 are held but are not backed up by expectations. Great Lakes Paper Company at Fort William contains two of the largest and latest news print machines. Timber limits are nearby and inexpensively worked. Costs are low compared with those of Minnesota and Ontario. The result of this condition was that, with the falling off in demand for news print, a considerable proportion of the business which normally would have gone to Minnesota and Ontario was sent to the Great Lakes mill. Great Lakes Paper Company was credited with the full price of the news print and in its books made ample profits to take care of bond interest. But the cash, except sufficient to pay wages and other direct operating expenses, was not reaching the company's treasury promptly and money due it was tied up with the receivership of Minnesota and Ontario. This is the explanation so far as it has been vouchsafed individuals and firms interested in Great Lakes Paper bonds. While news print demand remains low, it is said that the bright spot in the situation as regards Minnesota and Ontario Paper is a controlled company, National Pole and Treating Company, a company which in the Northwestern States is in a business similar to that of the Canada Creosoting Company.

Backus Defense Is Not Changed

The Master-in-Chambers at Osgoode Hall, Toronto, in a judgment handed down a few days ago, dismissed a motion to strike out a portion of the defence entered in the action brought by the Central Paper Company, Michigan, against E. W. Backus and the Seine River Improvement Company of Minneapolis. The plaintiffs have entered suit for $57,800 damages, claimed for the damming of the outlet of Lac des Mille Lacs, in the Thunder Bay district. This damming, it is further set out, flooded the timber lands of the plantiffs. On the part of the defence to which objection was taken, the defendants declared the plaintiffs had no title to the lands, and as a consequence could not bring action. This argument, the Master holds, is disputed.

Notes and Jottings of The Trade

Toronto was well represented at the funeral in Montreal of the late C. Howard Smith, of the Howard Smith Paper Mills. The local office was closed to enable the staff to honor the memory of their chief, while the funeral was also attended by officials of the Alliance Paper Mills and other paper mills having their head offices in Toronto. A. P. Costigane, secretary-engineer of the Ontario Pulp and Paper Makers Safety Association, and other officials of the organization, were among those in attendance.

The rumor to the effect that the T. Eaton Company, Ltd., was negotiating with the Abitibi Power and Paper Company for the purchase of the sturgeon Falls plant was denied by J. J. Vaughan, secretary-treasurer of the Eaton company. The plant, now closed down because of depression in the news print industry, was, according to report, to have been re-opened by the T. Eaton Company department stores for the manufacture of paper for their own requirements, but Mr. Vaughan maintains that no such project is being entertained by his company.

John Stadler, paper engineering expert, has returned to Montreal after visiting a number of the paper mills in the Niagara Peninsula.

The W. J. Ball Paper Company, Ltd., paper merchants, Phoebe street, Toronto, suffered damage to the extent of about $2,000 in a fire that recently occurred in their premises.

Recent advices from Thunder Bay say that the forests are serenely quiet this winter. In past years they have echoed to the ring of several thousand lumberjacks' axes and pulpwood cutters, but this season only a few scattered camps are in operation. It is the quietest winter in ten years, owing to the fact that paper mills and railways have adequate supplies of pulpwood and ties.

Leaving the cares of his office for a couple of months, S. F. Duncan, president of Provincial Paper, Ltd., Toronto, has gone on a trip to Southern France. Mr. and Mrs. Duncan will stay on the Riviera till April 1 and then proceed to Paris.

George Davidson, sales manager of the Howard Smith Paper Mills, was in Toronto recently en route to the Canadian West on a business trip.

Provincial Paper, Ltd., is engaged in carrying out a number of improvements at its Port Arthur Division. A new Cameron rewinder and suction press rolls are being installed and a sulphite storage room and enclosed loading shed are being constructed. In addition the company is also installing a considerable amount of minor equipment for the general improvement of the mill.

The Canada Paper Company has just issued a new folder under the title "Brilliant Art Photo Book." The paper is a brilliant white color and its smooth, uniform surface makes it adaptable to various kinds of half-tone printing.

Toronto paper dealers and the printing trade have received booklet No. 2 in the 1931 co-operative campaign for helping Canadian printers, inaugurated by the Howard Smith Paper Mills. The booklet is entitled "Standarization and Utilization of Waste" and it points out ways and means whereby sizes and shapes of paper may be utilized that will meet every need and yet be cut without waste.

The Canadian Paper Box Manufacturers' Association are actively engaged in preparations for their annual convention to be held at the Big Win Inn, in the Muskoka region, June 26 and 27. Already an impressive array of speaking talent has been arranged for, including Dr. Schofield, of Quelph, Ont., an authority on world business conditions; Professor McPhee, formerly on the staff of the University of Toronto, and now efficiency expert of the York Knitting Mills, Toronto; Mr. Walmsley, of the Meihle Corporation; Mr. Gage, the noted authority on lithographing, and A. G. Burry, of the Fort Wayne Paper Box Company, and a director of the National Paper Box Association.

Returning to North Bay from an inspection trip of the T. & N. O. Railway, George W. Lee, chairman of the commission of the railway, stated that the pulpwood industry had been active during the winter. At the present time 200,000 cords of pulpwood line the railway awaiting shipment. "This is more than during any previous period in the history of the railway," stated Mr. Lee.

Obituary

George W. Knowlton

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., March 21, 1931—George W. Knowlton, pioneer paper manufacturer of Northern New York and president of Knowlton Brothers, Inc., died yesterday at his home here following an extended illness. He was 91 years old and death was attributed to his advanced age. His passing brought to a close a long and successful career in the industrial life of this section. The Knowlton Brothers concern is rated as among the oldest industries in the State and was founded about 1824 by Mr. Knowlton's father. As head of this company Mr. Knowlton had risen to a position of considerable importance in civic affairs and his death came as a shock to his many friends. That his knowledge of business affairs was recognized is shown in the fact that he had served a term as president of the American Paper and Pulp Association, a position which he filled creditably.

Mr. Knowlton had directed the affairs of the paper company since 1892 when it was incorporated. When the firm was organized many years ago it confined itself to making a few forms of crude paper but the business progressed and today it produces only the highest grades of papers. Considerable time has been expended in the making of high grade colored specialties, the most conspicuous in this line being production of paper for catalog covers. Only a few years ago engineers discovered that one of the lines turned out by the company was especially adapted for radio instruments and large orders were booked. Under Mr. Knowlton's guidance the plant was enlarged on numerous occasions to care for increasing business. A large addition was constructed in 1905 and later on an electric power system was installed in the plant. The firm had the distinction of being the first paper mill in the city to adopt electricity for the manufacture of paper.

As the firm expanded Mr. Knowlton came into the limelight as a paper mill executive and when the Ontario Paper Company was organized at Glen Park he was made president. In 1900 when the St. Regis Paper Company was formed he was offered the position as president and he retained that position for several years. The stock held by Mr. Knowlton in the St. Regis Paper Company was acquired by a group of capitalists headed by Floyd L. Carlisle in 1916. He was also instrumental for the formation of a number of the largest financial institutions in Northern New York. The survivors include the widow, five children, and a number of grandchildren.

Edward Parsons Bagg

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., March 24, 1931.—Edward Parsons Bagg, 76, for the past 46 years treasurer of the Parsons Paper Company and for 53 years connected with that organization died Friday afternoon at Deland, Fla., following a shock received the day before. A wire notified relatives of his serious condition. John L. Bagg of Millers Falls who was in Cuba was also notified and hastened to Deland. Mrs. Bagg was with him; the couple left early in January to spend the winter and early spring months in Florida.

Mr. Bagg's long connection with the Parsons Paper Company links the beginning of paper manufacturing in Holyoke with the present as the Parsons Paper Company was the first paper manufacturing concern to locate in Holyoke, the late J. C. Parsons organizing the company. It was under Mr. Parsons that Mr. Bagg had his first lessons in papermaking, coming in 1877 to Holyoke after three years with the Third National Bank of Springfield. His father, Aaron Bagg, was one of the original founders of the Company.

When Mr. Parsons died in 1884 Mr. Bagg had so favorably impressed the stockholders with his ability that he was chosen to the position of treasurer of the company which he held until his death. The Parsons Paper Company has had but two treasurers in its 75 years of existence—Mr. Parsons and Mr. Bagg.

Under his leadership the Parsons Paper Company won an envied place in the van of the best papermakers of the world its Scotch Linen Ledger being known the world over. He was one of the organizers of the Valley Paper Company and was on the board of directors of the Hampden Glazed Paper and Card Company.

His interest in papermaking was not confined to Holyoke as some years ago with a group of men that included Charles M. Phelps, Henry M. Gaylord, Timothy H. Fowler, William McCorkindale and Aaron Bagg, Jr. (son of Aaron Bagg who was one of the founders of the Parsons Paper Company and brother of Edward P. Bagg) reorganized a mill at Millers Falls under the name of the Millers Falls Paper Company. This mill originally was built to make cover papers; but the new owners remodelled it, added another machine and manufactured instead medium priced bond papers of which "Old Deerfield bond," was typical.

Aside from being one of the founders of the Holyoke Silk Hosiery Company with which he had associated the late Charles P. Randall, his active manufacturing interests were confined to the paper making field. He was president of this concern from its start until his death. He was also interested in the Farr Alpaca Company of which he was a director for ten years.

He served as president of the Y. M. C. A., was on the church committee of the Second Congregational church, a member of the Mt. Tom Golf club for a time, and of late years of the Orchards Golf Club of South Hadley.

He married Eliza Parsons October 6, 1881, from which union there were four sons—Dr. Edward P., Aaron C., John L., and Robert P.

His first wife died October 20, 1917 and a few years later he married Jessamine C. Phelps who survives him with all four sons.

Charles Beebe

Charles Beebe, well-known talc merchant, of 147 Nassau street, New York, and father of Dr. William Beebe, the distinguished scientist and explorer, died suddenly last Sunday, March 22, at the home of his son, 33 West 77th street, of heart disease, aged 80.

Mr. Beebe possessed many friends in the paper industry and was highly esteemed by all who knew him. His wife, who was Henrietta M. Youngclove before their marriage, died in 1925. Their son is the only near relative surviving. The funeral service was held on Tuesday last at Glens Falls, N. Y.

Mr. Beebe was a veteran of long service in the New York National Guard, in which he was a lieutenant in the Gatling Battery in Brooklyn. He took part in the suppression of the riots here at the time of the Civil War.

Fritz Lindenmeyr

Fritz Lindenmeyr, president of Henry Lindenmeyr & Sons, general paper merchants, of 480 Canal street, New York, passed away on the night of March 19, at the age of 58 years. Mr. Lindenmeyr was connected with the firm of which he was the head for almost forty years. He is survived by his wife, Virginia, and a married daughter. Mr. Lindenmeyr was active in the trade and held various offices in the National Paper Trade Association.

William Anderson Castle

Word has been received of the death of William Anderson Castle, president and treasurer of Castle & Overton, Inc., importers of and dealers in paper mill supplies, of 200 Fifth Avenue, New York, who passed away suddenly at Del Monte, California, last Sunday, March 22, aged 73. Mr. Castle is survived by two brothers and a sister. His wife died several years ago. Further information will be found in next week's issue of the PAPER TRADE JOURNAL.

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An Old Timer's Reminiscences

By Joseph H. Wallace, Pres., Joseph H. Wallace & Co.

(Continued from last week)

All we can say is that it was a low form of wit, when we bought a lot in the high part of Yonkers on which to build a home, for one of our so-called friends to say, "he intends to live on a bluff hereafter as heretofore." The real reason that I bought the lot was because it had so much land to the square foot. The slope was about 20 per cent and of course I knew that the hypothenuse was a bit longer than the flat side of a right triangle either way you set it. "That is one of the advantages of a scientific education"—as a landlord once told me. He was a professor (?) of chemistry at Columbia University and he personally polished all the floors in the apartment house he rented, because, "understanding chemistry is such a help."

A Privilege to Know Moses Hooper

The Chandler-Dunbar Water Power at Sault Ste. Marie, Michigan, was in process of development about 1911 and plans were made, etc., when the War Department stopped the game on account of the location being needed for additional canals, for navigation. This brought an interesting case to determine damages. It also brought acquaintance with Moses Hooper, of Oshkosh, Wisconsin, the eminent specialist in the law of water powers. To know him was a privilege. We were fortunate indeed to be connected with this law case and to work with Mr. Hooper and others several weeks in its preparation. It was tried at Grand Rapids, Michigan, the same week that a lot of good engineers were living at Hotel Pantlind, so it was long to be remembered. And our side won its contention, so "joy was unconfined." The possibilities of the Saguenay powers with Lake St. John, P. Q., Canada, as a mill pond and 35,000 square miles of drainage area then gave us a few thrills and some nice work. A report was made for McKenzie and Mann (the Canadian Northern Railway) and the result was that shortly afterwards, *the* Duke of North Carolina acquired the properties and put them to work.

Then Spanish River decided to build a paper mill, Cherry River Company at Richwood, West Virginia, continued extensive changes, Ocean Falls, British Columbia, called on us for further engineering work and Dr. Frederick S. Pierson gave us a job to design a paper plant in Chihuahua, Mexico. By this time we had a miniature pulp plant in our laboratory engaged in investigations of possibilities of all character of fibers. Frank Greenwood, now in the laboratories at Munising, Michigan, and Robert Stevens, now chief chemist at Bogalusa, were devoting practically all their time to these tests and it had become evident that the South was to be the next great paper center.

Oh! Death Where Is Thy Sting

Our London office, in charge of James Sickman, now manager of Ontonagon Fiber Company, Ontonagon, Michigan, was busy on several mill jobs and reports, among them one on the possibilities of Parana pines in Southern Brazil for Percival Farquhar of Brazil Railways. Sickman and the writer had to remain in Paris for a week or more while a meeting was awaited and we remember that Sickman's digestion gave out because of the delay in the meeting or something. What was it, Jim? Our London office was at Salisbury House, Finsbury Pavement, right in "the city," as the financial district is called. One of our friends said it was near the City Club because we were constantly engaged testing very good Scotch "in a short brown dumpy bottle" served there. On the way to New York on one occasion we found a keg containing ten Imperial gallons of that same brand in our room on the steamer with the compliments of Horace Parschall, the eminent consulting electrical engineer who was called over from Boston on a big job and stayed on to become *the authority* on high potential transmission in Europe. And when we remember that we gave away most of that ambrosial nectar, we are gnawed with remorse. "Oh! death, where is thy sting?"

Gravity a Universal Law

Billy Eibel's patent was the subject of a law suit in England and the writer was called as first witness for the Eibel Company. We had never been in an English court and were wondering about the proper way to address the judge, etc. This particular judge was fine and not only put us at our ease, but also defended us against the onslaughts of the opposing counsel. He had amused me by a series of questions intended to show that, while I may have been an expert regarding paper making in America, I had only limited experience in England, and had admitted that there were difference in methods between the two continents. When I stated that so far as I had observed gravity worked about the same in England as in America, he appeared fussed—but His Lordship stood by me, and the day was saved.

These lawsuits are a most attractive side line to an engineering practice. We sometimes wish there were so many disputes that they would keep us busy. Some of our clients have been very nice in that respect, and we appear to have had a long list of such cases during 1910-1915 especially. Perhaps the war's approach was astrological after all—and everybody was disputatious in those days of Pre-war conditions.

Ed. Merritt, Philosopher

"Ed" Merritt of St. Lawrence County, New York State, for many years majority leader of the Assembly, used to have a line of philosophy that covered all happenings. Driving along with him up Potsdam way, looking over water powers still undeveloped he suddenly stopped the horse under a wide spreading maple and turning to me said, "Wallace! How much money should a man possess to be happy?" I made some inane answer when he interrupted me with, "Pshaw! If a man possesses one thousand dollars, one hundred of which is *real* money, he is criminally rich." And then added, "Why so much effort to get more?" There being no answer—conversation regarding water power and fishing was resumed. When Ed was sent to the House of Representatives to represent St. Lawrence County, he was so homesick that he pined away to 300 pounds in a few months.

In 1911-12 and 13 there seemed to be many lawsuits, many industrial reports for financing or sale of property and many examinations of fibers with respect to their paper making possibilities so with the development of the kraft paper business in the South we kept busy, and had several trips to and from Europe for vacation periods, and Ed Merritt's philosophy appeared logical.

Only An American Could Do That

Charlie Barton was building Quiller screens, which we found among the Scandinavians, and we persuaded him to accompany us to Europe to look at other apparatus including Lannoye pulpers. On arriving at the mouth of the Mersey in a fog, we were told that passengers wouldn't be landed at Liverpool until morning. When the mail tender came alongside, Charlie and Max Aitkin, now Lord Beaverbrook, and yours truly, leaving our luggage to be forwarded by our stewards, picked up a bag

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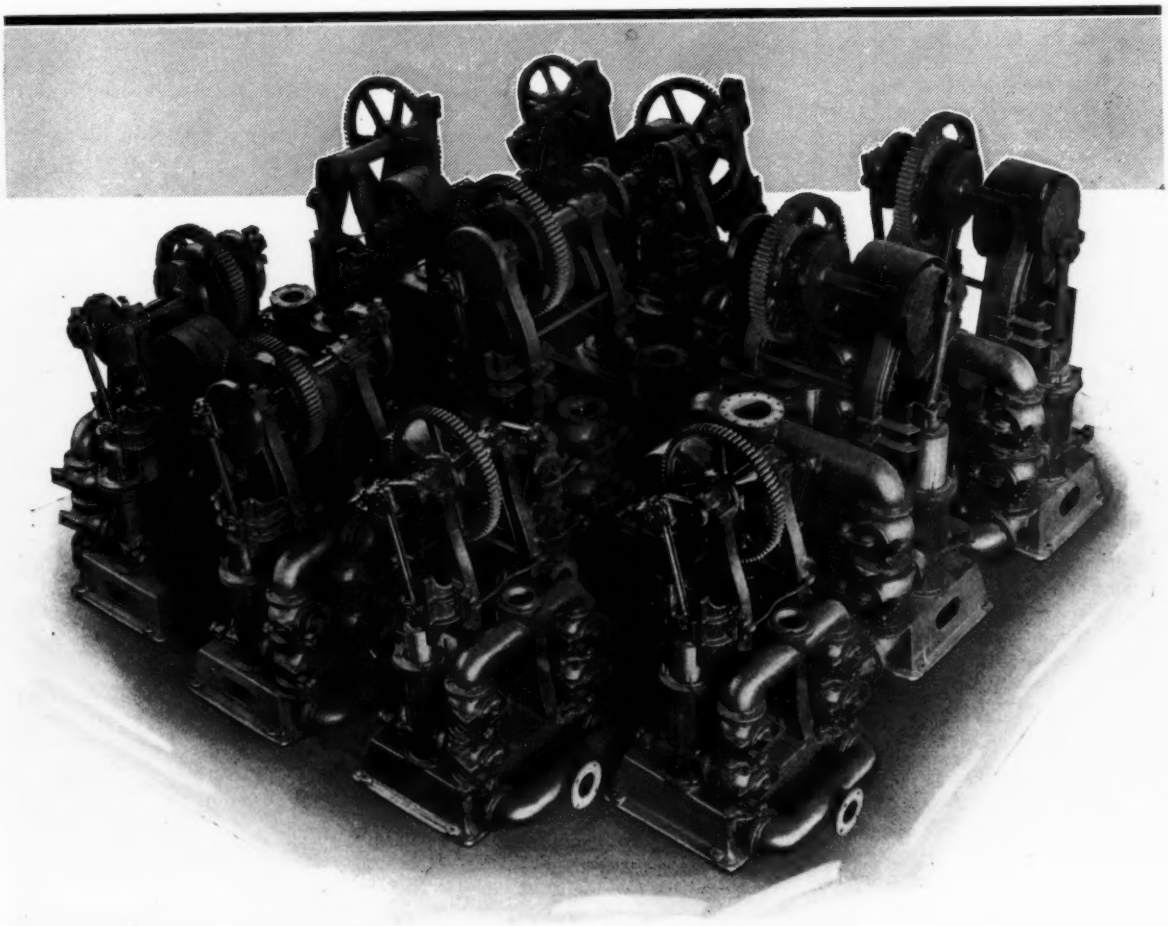

of mail apiece and carried it to the tender and then sat down behind the pile and soon were landed at Liverpool. Aitkin then got a passenger coach hitched onto the mail train and we three sole passengers told stories all night and arrived in London early the next morning. Arriving on schedule at 10 a. m. in Lombard street to attend a meeting for the organization of the Southern Paper Company, we were amused by hearing the secretary of the Trust Company at whose offices the meeting was to be held stating over the phone, "I have been through to the Cunard and it's quite impossible for Mr. Wallace to be in London until this afternoon." And he was emphatic on the *impossible*. Then he turned around and seeing me, began to tell me the same thing—then stammered—then said weakly—"Oh! I say!" and, after recovering his poise, added, "Only an American could do that!"

Ask Jim Sickman of Ontonagon

One more incident of importance occurred. I had the pleasure of introducing Charlie Barton and Tom Nuttall of Bentley & Jackson, both paper machine builders and the best sports I ever knew. The occasion was celebrated in our rooms at the hotel in the usual manner and Nuttall became more and more dignified as the introductions continued. Finally drawing himself up to full dignity with top hat, evening coat and clothes to match, he informed Barton and me that he was going to his hotel "to take a bawth." Barton said, "Why not take a bawth here, where Wallace and I can serve it?" And Nuttall answered soberly, "Why not?" So we filled a 'bawth tub,' and with all clothes on, Tommy stepped into it and soon was enjoying the cold water. We then undressed him and put him to bed in an extra room. Barton and I had collected dresses, bonnets and aprons from our relatives. So we dressed Tom in a Dutch dress, apron and bonnet and put him to bed and he soon was asleep. In the morning we were convulsed with laughter when he entered our room and, throwing himself in to my arms, sobbed "Save me from that Barton!" Now if you don't believe that one, ask Jim Sickman of Ontonagon—because Tom Nuttall will probably deny it all and dear old Charlie Barton has gone where the good sports go.

(To be continued)

Adopt Resolutions for Five Day Week

FORT EDWARD, N. Y., March 23, 1931—Resolutions leading towards the adoption of a five-day-week with a six-hour-day were adopted at the Montreal convention of the International Brotherhood of Papermakers and conferences are to be sought immediately with paper manufacturers in this country and Canada. It is claimed by officials of the organization that the proposed revision would aid greatly in eliminating the unemployment situation existing in some of the mill towns besides meaning a recall to work of a large number recently laid off. The principal interest was shown in the wage scale conference although no requests for increases were made. Arrangements were also made for conferences in the near future with mills not carrying any continuation clauses in agreements. The unemployment problem was also one of the prime issues and a controversy developed on the best manner of protecting the unionized portion of the industry from competition with non-union plants and also the best method to bring about greater employment. Organization affairs consumed the greater part of the time and resolutions were adopted calling for certain changes in laws of the union which will be submitted to a vote within the next few weeks.

Addresses Superintendents on Maintenance

KALAMAZOO, Mich., March 23, 1931.—Edward Rutz, superintendent of power and maintenance at the Bryant Paper Company, addressed the Thursday evening meeting of the Michigan division American Pulp and Paper Superintendents Association on "Maintenance." The meeting was well attended.

New York Trade Jottings

Headquarters of the News Print Service Bureau, of which R. S. Kellogg is secretary and treasurer, have been removed from Room 606 to Room 604, Canadian Pacific Building, 342 Madison avenue, New York.

* * *

R. S. Kellogg, secretary of the News Print Service Bureau, was the principal speaker at a luncheon of the Co-Operative Club, held at the Fraternities Club, New York, yesterday, Wednesday. The subject of Mr. Kellogg's address was "News Print Paper Making," which he described in an interesting and informative manner.

* * *

There was an excellent attendance at the weekly luncheon and meeting of the Eastern Division of the Salesmen's Association of the Paper Industry, at George's Restaurant, New York, last Tuesday. David A. Weir, head of the Education Department of the National Association of Credit Men, gave the most up-to-date information available on credit conditions at the present time. His address was thoroughly enjoyed by those present.

* * *

Report of Union Bag and Paper Corporation, New York, including Union Bag and Paper Power Corporation from January 1, to May 6, 1930, for year ended December 31, 1930, shows net loss of $155,283 after depreciation and interest. In previous year, Union Bag and Paper Corporation, including Union Bag and Paper Power Corporation, for the full year reported net loss of $2,874,290 after depreciation, interest, inventory adjustments, losses from sales of non-operating properties equipment and unamortized balance of discount and expense on bonds retired in 1926. Operations for first six months of 1930 showed a loss of $240,589 after all charges, including depreciation and write-down of $86,000 in inventory, whereas the operations for the last six months showed a profit of $85,306 after depreciation.

* * *

Former Governor Alfred E. Smith, president of Empire State, Inc., announces the rental of the complete ninth, tenth and eleventh floors of the Empire State Building, an amount of space equal to a 22-story building on a plot 100-100 feet, to the E. I. du Pont de Nemours & Co. of Wilmington, Del., to be occupied by a number of their component companies. Mr. Smith said this lease calls for a gross rental of approximately $3,000,000 over a term of years. The space leased fronts 309 feet 6 inches on Thirty-third and Thirty-fourth streets, and 164 feet 4 inches on Fifth Avenue, and the same on Astor Court. The du Pont companies will begin occupancy of their space on May 1 when the great Empire State structure will be opened to the public. The du Pont subsidiaries which will occupy the Empire State space have been scattered throughout Manhattan. Under the new plan they will be centralized under one roof in space served by ten elevators. The companies which will occupy the new building are: Roessler and Hasslacher Chemical Company, Grasselli Chemical Company, Viscoloid Works, National Ammonia Company, Fabrics and Finishes, du Pont Explosives, du Pont Rayon Company and Krebs Pigment and Chemical Company.

Pulpwood Situation Unsatisfactory

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 25, 1931—The pulpwood situation in Europe is still generally unsatisfactory, with supply exceeding the demand to such an extent that there is a continued pressure in prices, according to a report from Commercial Attache M. H. Lund, at Oslo. No remedy has been suggested other than a decrease in cutting, which is not only difficult to carry out but would be rather ineffective this year because of the tremendous wildfall in several countries. Prices at present are at lower levels than for many years.

Let this seamless Goodyear belt help that DRIVE *on costs*

Where belt costs are likely to be high—as on beaters—you can save money with Goodyear Thor Belting, seamless.* The construction eliminates a center seam and frees the belt from tear under excess strain and from fray on the edges (see cut). Thor edges are armored by the enclosing envelope. Heavy silver-duck—strong at the fasteners—firmly bound and cushioned between plies with rubber, keeps this rugged Goodyear belt working for you far beyond other belting and at far lower costs.

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Paper Mill Management

By H. C. Macaulay, Gen. Supt. Continental Paper & Bag Corp., Rumford, Me.

The present day tendency of paper mill owners to employ only technically trained men is apparent to anyone interested in the matter. That there is good reason for so doing is also quite clear if we give the subject a little thought. Time was and not so long since, when owners found it necessary to secure someone to fill the manager's chair, they turned to someone trained and versed in the art of papermaking. Only those who had come up through the ranks received consideration. The very great majority of such men made excellent managers and many may be found today directing the affairs of some of the most successful mills in America. Many such men have built and operated mills of their own and are numbered among the successful men of their generation.

Today we find the practical and self-trained men replaced with the technically trained men, in many cases by young men who have only quite recently received their college degree and that degree may be engineering in any one of its many branches, or it may be in chemistry or in most anything else, so long as it is a certificate of proficiency in some particular line by some recognized school.

Now, why this change? Why this swing from one extreme to the other? There is only one answer. Education. And what is education? Briefly, it is the training of minds to think—that is, to think correctly. The question naturally arises, who is to blame for the failure of present day paper mill operators to gain recognition as superintendents and managers? Is it the mill management? No, the management is only too glad to place reliable and capable men in charge of affairs. Is it the technically trained man or college graduate? No, he is only trying to succeed in life and therefore takes advantage of the opportunity to sell his wares. True, such men often come into an organization with little or no knowledge of the art of papermaking, but we must not overlook the fact that they have the foundation on which to build and a determination to succeed. Well then, what is wrong or who or what is to blame for this present day condition? The answer is, the present day mill worker only is at fault, at fault because of his lack of sufficient education, at fault because of his lack of training, at fault because he has failed to grasp the opportunities and take advantage of the facilities of self-improvement. There are correspondence schools, night schools and vocational training, and even in the absence of all these, the many books for home study eliminate all excuse for lack of training in any chosen field of endeavor. Besides we are not putting in the long hours of labor that many of us remember, when it was customary to work 11 hours on the day shift and 13 hours at night and a 36 hour shift was of common occurrence.

In considering the many present day advantages of the mill worker perhaps we have stumbled on the reason for his failure. Undoubtedly labor organizations have done much to shorten the hours of toil but they have also limited our sphere of action by striking boundary lines that must not be crossed, that is, in a great many cases men are assigned certain duties and must not invade the other fellow's territory by attempting to do anything more than a certain specified operation. I remember, for it is not so many years since, when it was forbidden the water tender to touch a coal shovel. If a pump had to be moved only pipers were permitted to remove the bolts from the pipe flanges, so that the millwrights might remove the pump. Machine bolts were just ordinary machine bolts and might be handled by any mill mechanic until they were used to connect up a pair of pipe flanges, when all of a sudden for some mysterious reason, they became something else and were to be touched by pipe fitters only. An oiler must not touch an engine throttle even in the presence of the regular steam engineer, that was the engineer's job and so on all down the line. I have no doubt but that the same or similar conditions prevail in many mills today. The result is that all-round mechanics are few and far between. Your piper knows little or nothing about millwrighting. Your millwright on the other hand would not qualify as a good piper's helper. The same is true of repair shop work. Due to present day mass production, an all-round machinist is hard to find. In the large shops, men are trained to do one thing and do that thing well. There are the more or less automatic machines requiring only an attendant. An employee is put to work on a lathe or a planer or drill press and kept there with the result that no one man can take a piece of metal through the operation of lathe, planer, drill press, etc. and turn out a finished job. No man can expect to receive a broad training or extend his field of usefulness under such conditions. What is true along mechanical lines is also true on the paper machine. The day happily is past when operators are promoted to positions of greater responsibility as a natural sequence of events regardless of qualifications.

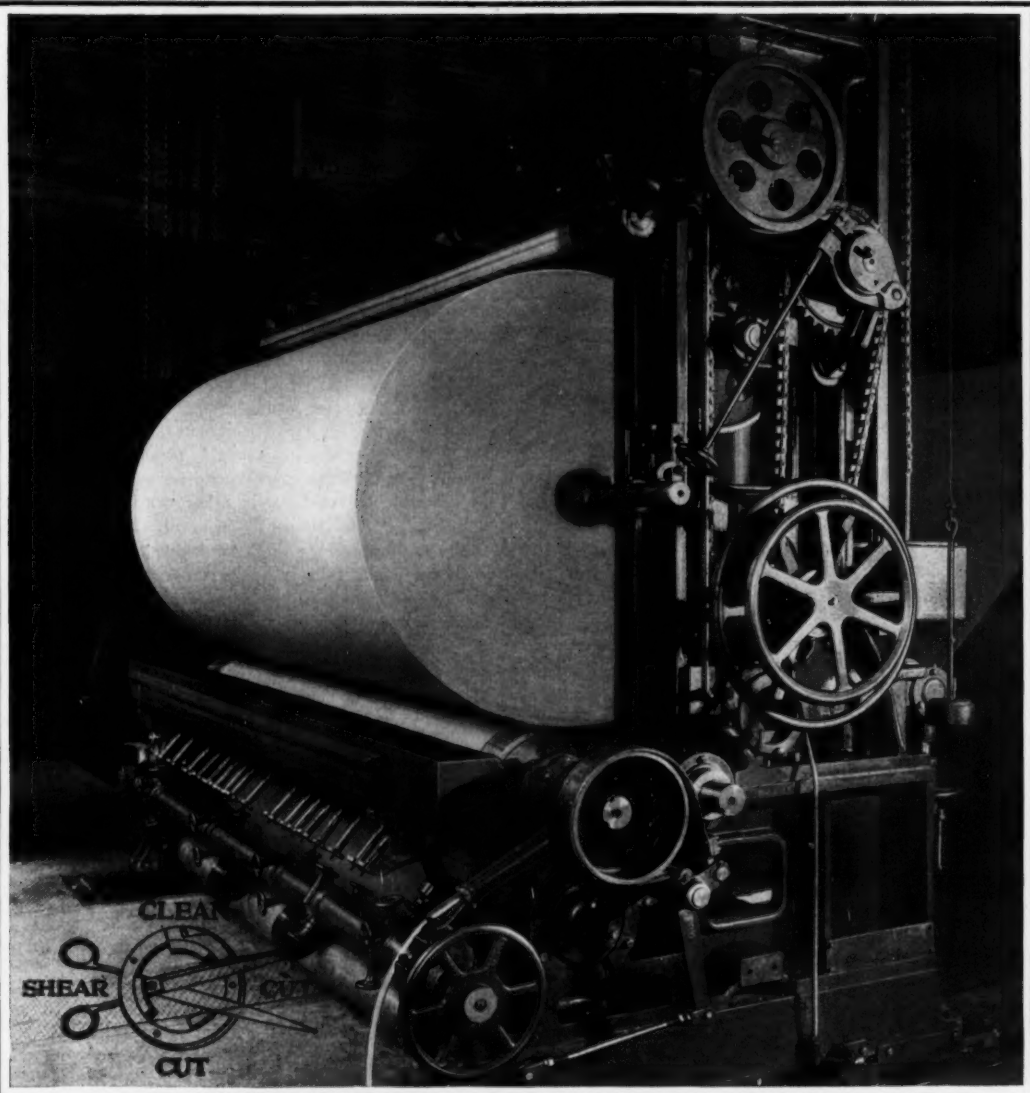
I have lived to see men start as fourth hands on a paper machine, promoted to back tenders, to machine tenders, to boss machine tenders and finally to paper mill superintendents, and in more than one case, to the position of mill manager, more as a natural sequence of events than because of ability or fitness for such positions. Such men could not hope to cope with present day conditions, for the reason that they lacked the broad training necessary to meet modern high pressure demands. If you walked with them from the finishing room to the beater room you covered their entire field of operations and training. Take such a man into the steam plant and he is lost. He does not understand even the rudiments of combustion or steam generation and must therefore rely solely on the steam plant superintendent for the efficient operation of that department. The steam engine or turbine and the many steam plant auxiliaries and accessories are a mystery. He knows that the exhaust from the engine together with a certain amount of live steam is used as make-up to dry the paper on the machine, but if you start talking about superheated steam, per cent of moisture, compression or expansion, latent or sensible heat, you might just as well be whistling.

Take him into the electric plant and he is at as much a loss as in the steam plant. The wiring generators and motors, voltage regulators, ammeters, wattmeters, overload relays, circuit breakers and switches only tend to confuse. A discussion of the different usages and functions is out of order.

The pulp mill being a comparatively simple operation is possibly not so confusing but like the steam plant and the electric plant the successful and efficient operation must be left in the hands of the man in charge. Suppose you have a sulphite mill in connection with the paper mill and you pay a visit there. Although he has been using sulphite for years his sole knowledge of the operation probably is that the wood is chipped, screened, cooked in digesters, again screened, and either taken off a wet machine in laps or pumped to paper mill or storage tanks. Sulphur burning, acid making, methods of cooking, system of screening, etc. in fact the whole operation is something yet to be learned. The department like others must therefore be left to the judgment and care of someone else.

Repair work is generally looked upon as a department that must be tolerated. If the master mechanic is up to the average, just leave him alone. If something breaks he will attend to it, so why worry before something happens. This view may no doubt appear

a clean cut ~ a sure cut ~ a shear cut ~



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a shear cut ~ a clean cut ~ a sure cut ~ a shear cut ~

a clean cut ~ a sure cut ~ a shear cut ~

somewhat far fetched but is intended to serve as a means of bringing out more fully what is to follow.

Take the case of the trained engineer. He comes on the job not as a specialist in any particular line but his training has been such that he has a general knowledge of combustion, heat and steam, electricity, and mechanics as well as hydraulics and other branches. In other words he has the foundation on which to build and needs only to concentrate or specialize in any given line he may choose or circumstances dictate. With this advantage he is equipped to go much farther in a given time than the so called practical man. The great trouble with many practical men is the fact that so many of their methods and undertakings are mighty impractical resulting very often not only in a waste of time and effort but unfortunately in waste of money as well and that sometimes in very large amounts.

The average paper mill worker has not had the benefit of early training and so starts out in his chosen vocation with neither education nor experience to guide him, a big handicap but one that must be overcome before he can hope for success. He must use every means at his disposal for self-improvement so that as time passes and he some day finds himself working as a machine tender, he not only understands his machine, but has a good working knowledge of all other departments as well. It would, of course, be much more satisfactory and a much better knowledge would be gained if it were possible to start, say in the wood room, and go to acid plant, to digester department, to screen room, to beater room, and then to paper machines instead of starting in on paper machine first, as many do. But even then, we have omitted the steam plant, the electric plant, and the repair shop, all of which play a vital part in the successful management of any paper mill.

As a general thing, the best all-round mechanics and very often the best all-round paper mill men, have received their training in the small mill of one or two machines. The reason being that the job is not big enough to support a man that specializes only in some one or two lines. The duties are so diversified that he is forced to obtain a working knowledge at least, of all or most all operations. But be the plant large or small the whole matter of a man's success lies in his desire to obtain and his willingness to work to gain knowledge. Very early in life, we learn with regret that there is no Santa Claus yet many of us go through life waiting for something to happen or some philathropist to be attracted to us thereby solving a troublesome problem—just Santa Claus again whether we recognize it or not. A short time ago being dissatisfied with some things that came to my attention, I wrote the following in an effort to improve conditions in my own plant.

Machine Tenders vs. Papermakers

If I were asked to define the term machine tender, I would say that briefly, it is one who tends a machine. As applied to papermaking it is generally understood as one who tends a paper machine.

If asked what is a papermaker, I would say it is one who understands the art of papermaking. He not only understands the fabrication of the sheet on the wire, how to remove the water and properly dry and finish the sheet, but also has a pretty thorough understanding of all things required for the proper forming and making of a sheet of the required strength and finish—both mechanical and chemical.

Go into any paper mill steam plant and ask who looks after the steam engines and no doubt you will be told that they have engineers in attendance. Get in touch with one of these "engineers" and ask him to define his duties—you will get an answer something like this:

"I start the engines up and keep them oiled and shut them down when occasion requires it." When things go wrong and something out of the ordinary requires attention, what do you do? "I send for the chief or superintendent as the case may be."

Such a man as the one pictured is not an engineer in any sense of the word. He is merely an attendant. Where engineering ability is needed someone else is called upon.

Go into the electric plant. You will find men in attendance there who are classified as electricians but upon investigation you find only generator and switchboard tenders. Steam engineers are not content and do not have to remain as engine starters and stoppers, nor do electricians have to content themselves opening and closing switches.

Other cases might be cited but those mentioned are sufficient to bring out the point I wish to get at.

There is just as much difference between a machine tender and a papermaker as there is between an engine tender and a steam engineer, or between a switchboard tender and an electrician.

If you are content to remain as a machine tender, I cannot see any hope for you ever becoming a papermaker. Of course, there are varying degrees of proficiency among machine tenders just as there are in all other lines of endeavor, but from my observation there are too many machine tenders, that is, men in charge of paper machines, who are capable and content to attend to the ordinary routine work sufficiently to keep the machine in operation while everything is going well but just as soon as something goes wrong or there is a change in stock supplied or anything that affects the quality of the sheet so that the tests drop below that which is called for on the order, they continue to produce paper that must eventually be rejected or they must send for someone to diagnose the case and prescribe a remedy. In other words, a machine tender is not sufficient. A papermaker is required. It is at such times that the ability and knowledge of the machine tender is brought out and it is shown whether he is a papermaker or just a machine tender.

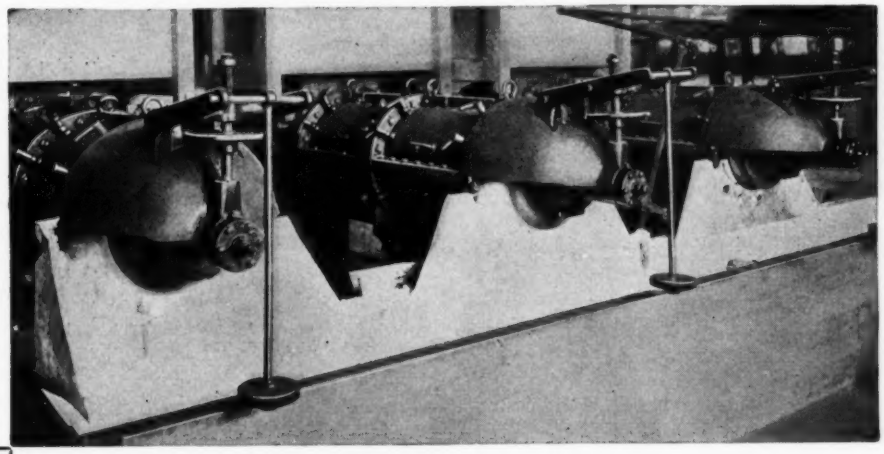
Now I do not wish to be unfair or to unjustly criticize paper machine operators. It is not possible for all such operators to be paper machine experts. I fully realize the very many things that may happen in the course of a day to defeat the best efforts of a thoroughly skilled operator but the fellow that is content to sit idly by when things are going well and then throw up his hands and wait for someone else to get him out of his trouble is certainly open to criticism.

Any man in charge of a paper machine should feel his responsibility for its successful operation during the time that he is on duty. This does not cover only the mechanical equipment but must include the personnel. He is responsible for both quantity and quality of paper produced and must therefore, be responsible for the acts and quality of work done by all those assisting in the operation of his machine.

The first and foremost point of consideration is quality of products. This is the thing of primary importance and cannot be compromised with. After quality comes quantity or machine production but we must bear in mind at all times that quantity comes after quality and not before. When we speak of quantity we mean the greatest possible production at the elast possible cost The fact that we must produce a quality product at all times does not always excuse us if production is below normal and cost of production excessive. A change of orders on the machine necessitating a change of weights and colors means time lost and lowered production, hence an increase in cost. But it is at such times that the skill and alertness of the machine tender is given an opportunity to manifest itself. Much time and paper may be saved if machine tenders will study such changes beforehand so as to have it fixed in their minds just what needs to be done and the order in which it may be done with the least possible interruption. Color changes involving complete washup on machine requires careful and thorough work on the part of the machine crew. Weight changes on the same furnish is a comparatively simple matter. Unless there is some special reason for doing otherwise the heavy weights are made first. A change to lighter weight basis involves simply the speeding up of machine until the correct weight is obtained. Of course, water must be added to raise the height of the pond to get stock at proper speed at slice to conform to speed of wire. Other minor changes may have to be made yet after all, the whole thing is a comparatively simple operation and as this paper is not intended as a list of instructions on how to run

"COMING EVENTS . . .

are forecasted by their shadows"



Actual Operating Results:

No. 1 Press Groundwood
10 Tons discharging
15 to 18% consistency
Tailings

No. 2 Press Groundwood
25 Tons discharging
35% consistency

No. 2 Press Sulphite
80 Tons discharging
25% consistency

No. 2 Press Kraft
54 Tons discharging
40% consistency

And the advent of the Valley-Screw Press forecasts new and better methods of dewatering pulp on tailings, groundwood, sulphite and sulphate pulps.

The Screw Press is already being advantageously used. Surprising results are being shown in obtaining high stock consistencies, and worthwhile economies in dewatering are being accomplished.

Mill progress this year—more than ever—depends on *low cost* production. The only way costs can come down (since paper making is primarily a machine process) is through new, improved methods and machines.

The thirty present installations of the Valley Voith Screw Press are proving—without exception—that this new, improved method of dewatering pulp is making reductions in cost . . . as well as improved results.

The keenness of present competition certainly merits a thorough investigation of this machine. Write the Valley Iron Works Co., Appleton, Wisconsin, for full particulars.

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your paper machine, we need not go into detail. The point I wish to emphasize is that it is often possible to get production, keep costs down and at the same time produce a quality sheet of paper even though we may have frequent order changes.

To cite a case in point. Not so long ago one of our machines was running on an order for mill wrapper of two different basis weights. The machine tender in making the change from one weight to the other broke the sheet down at the presses with the result that considerable production was lost on that shift, all because no thought was given as to the necessity for such action.

Now if we must suffer a loss in production on an order of mill wrapper what then must be the loss expected on paper of the higher grades, when it is necessary to change basis weights three or four or even more times in the course of a day's run. This is surely a matter worth thinking about.

The matter of machine tender's reports is something deserving of more attention than is usually accorded them. Take for instance, The Daily Paper Machine Record. On this report space is reserved for the recording of lost time yet we almost daily find such items such as calenders plugged, trouble getting paper over driers, trouble with presses, paper sticking to presses, paper crushing, trouble with weights, etc., etc. Now the report is headed "Cause of Lost Time" but not a single one of the expressions noted, conveys any intelligence as to the cause of trouble. They are absolutely worthless as a guide to the correction of the fault and therefore, do not serve in any way as a preventive against future troubles and might just as well be omitted and the space left in blank.

An expression in common usage among machine operators when difficulties are encountered and they are asked to explain the trouble is: "I don't know, I have been fighting it all my shift, or fighting it all night." Some of the greatest fighters the world ever knew were among the least intelligent, so that the word fighting does not convey the thought or meaning that the particularly troublesome condition has received careful and intelligent study in an effort to overcome it; if anything the contrary is true.

Put yourself in the position of a superintendent of your department when production is down or paper is low in test or otherwise fails to meet the specifications called for, when he is confronted with a report filled out as referred to above, and upon inquiry as to the cause receives an answer such as the one just mentioned.

Your superintendent must give a comprehensive report to the management and show just cause for the condition. The manager in turn is held accountable to his superiors. Why then put the burden of covering up your mistakes or failings on others? You hold the key to the situation in your own hands, then why not give others that have additional burdens to bear consideration?

Reports often state that machine gave trouble yet no particular trouble is specified, everything is reported in good order mechanically, what then? Such a report in itself is without meaning, yet it may tell your superintendent a lot that is not at all to your credit. Don't forget that very often—"confession is good for the soul."

It has been my observation while traveling on the road through this vale of tears that the fellow that is trying hard to get ahead in life and improve himself in his chosen line of endeavor is continually asking questions as to the why and wherefore of things pertaining to his calling. It's a mighty good practice for both operator and supervisor as it keeps both of them mentally alert. Try the game of sticking the boss, it's a good one and a game you will both benefit by. Every time he passes your machine have a question ready for him, not a catch question but one that demands a good common sense answer. Try it for a week and decide for yourself whether or not it is worth while, I know what your answer will be.

It is the custom in a great many plants to hold meetings for the different department heads and operators at stated times. Some plants have monthly meetings, some weekly and some daily for the supervisory force. In most cases the meetings for the superintendents is separate from that of the operators. The idea being that in this way more good will be obtained inasmuch as operators would in a great many instances have little interest in many of the problems discussed at a meeting of department superintendents and their time would to a great extent be lost.

It is good to meet together once a week for the purpose of discussing matters of mutual interest, but the real purpose of such meetings is often lost sight of. It is right and proper to discuss the thing that is giving us trouble today or the thing that bothered us yesterday in an effort to find a solution of the trouble. We cannot help being benefited by such a discussion. But get this, the big thing, the thing back of all such discussions is to get men to think. Not just about the paricular thing that may be under discussion at the time, but to think at all times, to teach men to think a way out of all difficulties. Education is simply the training of minds to think correctly—to reason from cause to effect. Unless we learn to do this we cannot hope to derive much benefit from listening to discussions of matters in which we are interested, much less are we able to take an intelligent part in such discussions. Too often we are content to let someone else do our thinking for us. Think that over.

* * *

Where then shall we begin? Well we can begin at the wood pile or yard or we may begin at the coal pile. Before we can start up our plant we must have power so why not begin at the coal pile.

The coal most used for steam plants is bituminous or as commonly called, soft coal. Anthracite or hard coal is the mostly used coal for household purposes. The coal is the source of energy used to drive the steam engines, turbines, etc., also to dry the paper on the machine. This energy is stored in the coal in the form of heat and in order to be of service to us this heat must be liberated. To liberate it, it must be burned, or it must be liberated by combustion. Now before we start burning the coal under the boiler we should know about how much heat the coal contains, for it is not enough to know that sufficient steam is being generated, but we want to know what efficiency we are getting, or in other words, we want to know what percentage is being wasted. To do this we must know how much heat is in the fuel. A good grade of bituminous coal will run well over 14,000 Btu. per pound, whereas a good grade of crude oil will run close to 18,500 Btu. per pound. The ratio of the heat generated for useful work in the form of steam, to the heat stored in the fuel determines the boiler efficiency, and may be anywhere between 50 per cent for old and poorly kept up as well as improperly supervised plants, up to 80 per cent or even higher for the most modern plants under proper care and supervision.

To get high efficiency, boilers must be kept clean both inside and out. They must be well insulated to prevent the escape of heat to surrounding atmosphere. Sufficient air must be supplied to insure complete combustion of fuel. Fuel must be properly distributed over grates to insure proper mixture of air and feed water must be introduced in the proper manner. Black smoke issuing from the stack is a sure sign of imperfect combustion, but it does not follow that a clear stack indicates the efficient burning of the fuel. After enough air is admitted to the furnace to give complete combustion, any additional air admitted results in a decrease in efficiency, as such air is not necessary to support combustion and therefore absorbs heat that is discharged to the atmosphere without doing any useful work. What is true in burning coal is also true of oil as fuel, but it may be added that the tendency to introduce too much air is greater with oil than with coal due to the fact that there is no fuel bed on furnace grates, therefore little or no resistance to the excess air.

In addition to the boilers we will find fuel economizers that utilize the waste flue gases to heat the feed water before it enters the boilers. We may also find air heaters for heating the air before it is admitted to the boiler furnace. Although often found neglected it is important that this equipment get sufficient care and attention to keep it clean and otherwise properly maintained or we

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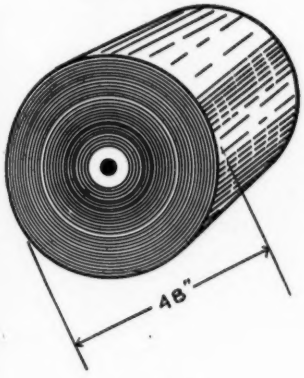
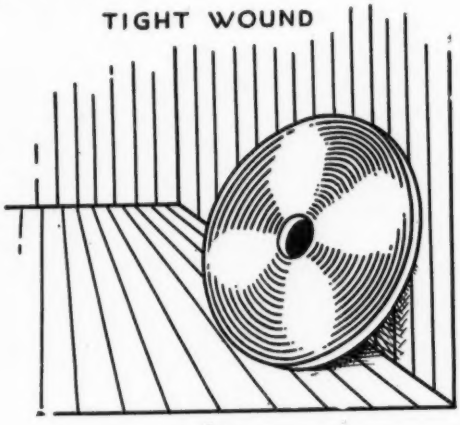


TIGHT WOUND



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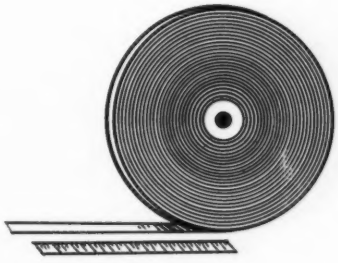

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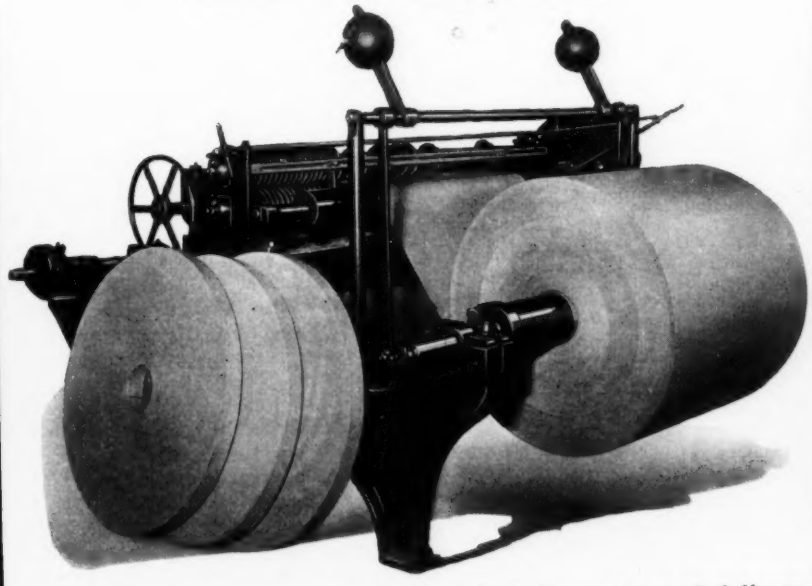

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cannot hope to get a high over-all efficiency. The amount of care and attention is of course governed to a very great extent by the type of plant. In a small plant where the firing is done by hand the operation is necessarily a very simple one. We do not look for efficiency records in such plants. In the larger stoker fired plants, greater skill and a higher standard of supervision is called for. Whereas in the later types of large plants using powdered coal as fuel, and supplied with all modern equipment, care and supervision of the highest quality is demanded. Although it would be only fair to say here that if some of the same skill and talent found in the large plants was applied to some of the smaller ones their owners would be very agreeably surprised.

In order to keep abreast of the times and meet modern demands many companies engaged in the manufacture of paper are scrapping their old obsolete steam plants and installing the latest type of high pressure boilers, with all improved appliances for control. After the new plant is put in operation careful tests are run to determine the over-all efficiency and comparison made with the old plant. The result is usually gratifying indeed, but one thing is often lost sight of. The new plant is equipped with individual steam flow meters, draft registers and recorders, temperature recorders, CO_2 recorders and everything necessary for the accurate control of all operations, whereas the old plant was equipped with pressure gauges only. Then again when a change is contemplated the management is not disposed to spend money on equipment that in a comparatively short time will have to be discarded. The result is that probably for several years the old plant has not been kept up. Such neglect is bound to collect its toll, hence a time arrives when any change whatever involving new equipment will prove a betterment and show a marked saving when compared with the former condition. In a great many cases had a very small part of the investment in the new plant been put in the old one, sufficient to equip it with at least some of the modern appliances, an appreciable saving would have been made in fuel and the big investment in a new plant made to look less attractive.

Many of the modern plants being constructed today are equipped for burning powdered fuel only. The efficiency of such plants is unusually high and attracts much favorable comment, but when the cost of installation is considered the modern stoker fired plant is worthy of attention. The choice between the two usually hinges on the question as to whether or not the possible higher efficiency of the powdered fuel plant is sufficient to offset the increased investment over the stoker fired plant. Local conditions also have a bearing on the matter.

The same points that govern the efficient operation of the coal burning plant are applicable to the oil fired boilers whether mechanical or steam atomizing burners are used. With steam atomizing burners, 3 per cent of steam generated to operate burners, oil pumps, etc., is sufficient. Any amount in excess of this figure is probably being wasted.

Only enough steam to completely atomize the fuel should be used at the burners as any amount in excess of this is not only a direct waste of steam, but this extra steam must be brought up to the temperature of the furnace gases resulting in further heat losses.

The type of oil burner used is of very great importance and care should be used in the choosing, as some types are not only wasteful of steam but require frequent cleansing, necessitating the making and breaking of connections which tends to cause leaks and at the same time causing a drop in boiler capactiy as well as lowered efficiency. Watch the flame; dark streaks are an indication of lack of proper atomization. The result is fuel waste and a smoking stack. When smoke is issuing from stack, soot is being deposited on boiler tubes and shell. Keep tubes and shell free from soot by frequent use of soot blowers. Use them every 8 hours at least. Don't forget that cleanliness and efficiency go hand in hand.

See that a sample of feed water is submitted to a reliable chemist for analysis and the proper steps taken to purify boiler feed water. The cost of so doing will be more than made up for by the necessity of less frequent internal cleaning of boilers. Use all condensate returns possible, thereby keeping water as hot as possible and lessening the amount of make-up water necessary, which also tends to reduce amount of impurities fed to boilers.

See that feed water pumps are maintained in good working order. Even in the small plants more than one source of feed water supply should be provided. Pumps should be of ample capacity to care for any emergency. In the smaller plants the steam driven duplex type is more often met with, while in the larger plants the steam or motor driven turbine of two or more stages is mostly used. Regardless of type there should always be at least one spare unit ready for service at a moments notice in reserve.

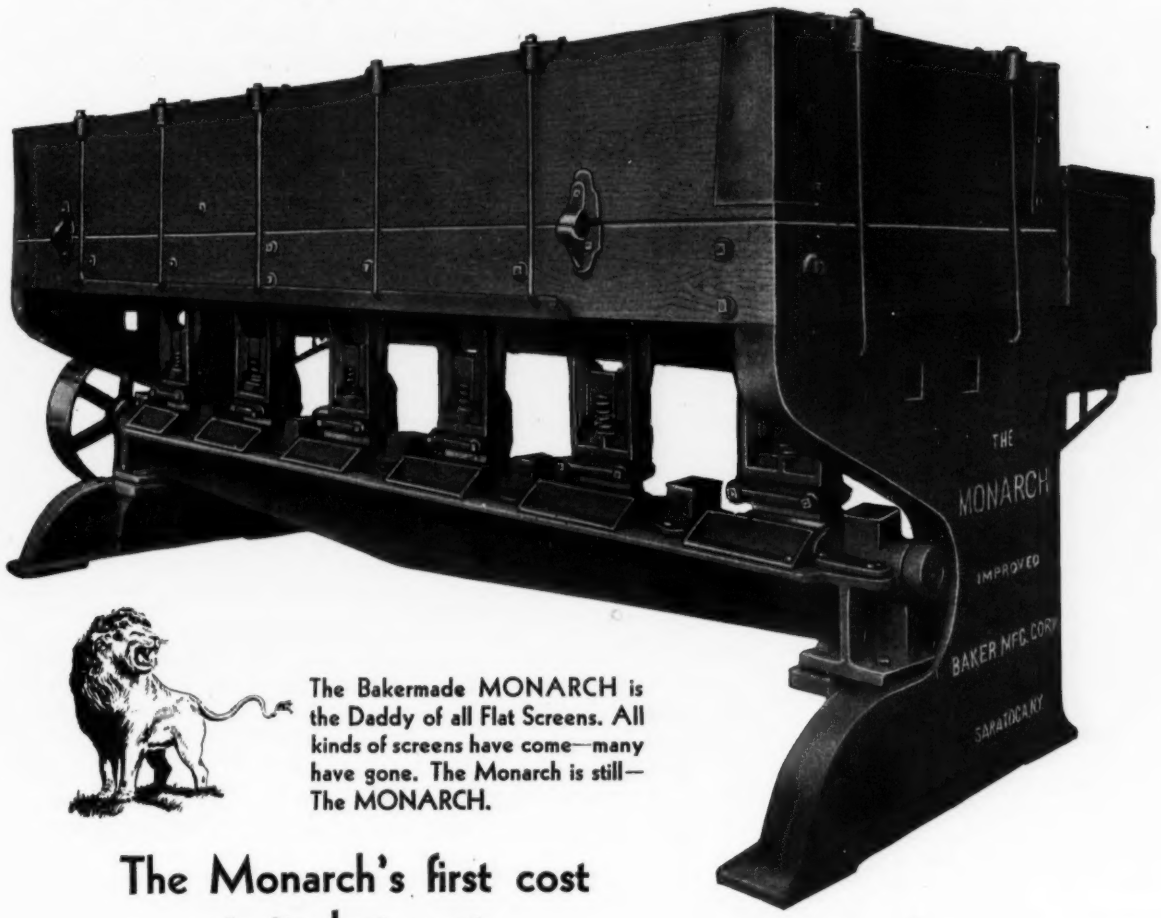
With good bright fires under the boilers and all reasonable precautions taken to prevent waste, and a good reliable supply of water maintained for boiler feed purposes, we may now turn our attention to the engine room.

There are various types of engines on the market any one or more types of which may be met with in use to drive the paper machines. We may encounter the common slide valve type, piston valve, various forms of balanced valves, or Corliss, single cylinder, twin cylinder or compound, either cross or tandem. Or we may find steam turbines. We are not so much interested in the type of prime mover as we are in the duty or function. The steam turbine is very compact and simple, requires no internal lubrication, therefore, the exhaust steam may be used directly in machine driers or piped to hotwell to heat feed water for boilers without the use of oil separators to extract cylinder oil as in the case of reciprocating engines. The turbine bearings are the only parts requiring lubrication and as those are always equipped with ample oil reservoirs and rings or other means of self-oiling they give but little trouble with reasonable care and attention. Steam applied to the turbine should be as dry as possible, preferable superheated otherwise rotor blades or vanes will not last. The steam turbine is a high speed machine, therefore, like all high speed equipment requires inteligent care and acurate workmanship when repairing or inspecting.

The various types of reciprocating engines differ only in mechanical detail. Regardless of type, steam is admitted at beginning of stroke and continues to be admitted until a point in the stroke is reached where it is cut off by the action of the governor which in turn is determined by the load and speed of engine, after which expansion takes place till near the end of stroke where exhaust part is opened and expanded steam is discharged to exhaust line. Upon the beginning of the return stroke the cycle is repeated, and so on for each revoltuion as long as the engine is in operation. This constant rubbing back and forth of valves and piston necessitates the lubrication of all internal moving parts, to reduce friction and preserve the metal. If this is neglected expensive repairs and replacements will result. In the case of the four valve engines having separate exhaust valves it will be found that these valves are the most difficult to lubricate. This is due to the continual washing that they are subjected to by the discharge of low temperature steam and condensate. Hence although other parts may not require so much oil, enough must be fed into the engine cylinder to insure sufficient lubrication at these points. Don't fail to consult the lubricating engineers that supply your lubricants as to your requirements. This service is free and they are glad to assist you. All moving parts require lubrication; see that it is not neglected. Provide proper facilities for reclaimng oil so that it may be used over and over. See that all packing and steam joints are kept tight, failure to do this results in scored piston and valve rods, loss of oil and general waste and neglect. Make sure that the governors function properly at all times to insure smooth running and safety. A variation in engine speed results in a variation in weight of sheet in the paper machine. Have valve mechanism, governors and flywheels inspected weekly. Have engines

If It's BAKERMADE—Eventually it Costs Less

THE NEW MONARCH SCREEN



The Bakermade MONARCH is the Daddy of all Flat Screens. All kinds of screens have come—many have gone. The Monarch is still—The MONARCH.

The Monarch's first cost is its last cost

There is no Flat Screen built that carries the same low ultimate cost; that Day after Day, Month after Month, Year after Year, will as unfailingly perform.

Let us tell you of Monarch Screens IN CONSTANT USE for twenty years without replacements of any guiding part . . . and still going. Also of Monarchs recently installed after an intervening experience with other types of screens.

Pulls out the dirt
Minimizes diaphragm crack and wear
No uneven cam movement
No loosening bolts
Special Baker alloy guides—accurately machined
Plunger movement unfailingly even
Shoe held firmly; cannot move sidewise
Block troubles unknown

The Baker Corporation

Saratoga Springs, N. Y.

23

The NEW MONARCH Runs Like a Sewing Machine

opened up, valves and pistons removed and a thorough inspection made twice a year at least.

It is common practice to have engine belted to a direct current generator that generates current to drive a variable speed motor which in turn drives the paper machine. Often a second pulley is placed on the engine crank shaft and belted to the constant speed line. The engine therefore runs at a constant speed at all times, whereas the speed of machine may be varied to met conditions. Many other hook ups are possible but all designed to accomplish the same purpose, service and flexibility.

The important thing to be observed if we are to obtain the best results from electrical equipment, is to kep it clean and dry. Dirt, oil and moisture is the enemy of all motors, generators, and electrical appliances. All bearings must be kept filled with a good grade of light oil. If these things are carefully observed equipment will give many years of reliable service. In the case of direct current motors and generators, care must be taken not to let brushes bear too heavily on commutators. Undue friction results in rapid wear on brushes on commutator, requiring frequent dressing and if let go too long will necessitate the removal of armature from machine, taking it to repair shop and having commutator trued up. After such a job has been done be sure that insulating mica is cut down between segments before machine is again put in operation. Also see that brushes are properly fitted, otherwise sparking and rapid wear and heating will result.

In a great many paper mills we will find the main generators driven by water turbines. For some reason not apparent to all of us, a water wheel is not supposed to require any attention until it shows some sign of distress, either by failure to maintain desired speed or some other manner. As a matter of fact periodic inspections pays not only in improved efficiency but also as insurance against interrupted service and peace of mind. Such inspections should cover among other things, shaft alignment, condition of bearings, thrust collars, runner defects, foreign substances and gate setting and operation. Also packing and stay rods. Very often faulty operation of governor may be traced to defective or improperly set gates. See that governors are kept well oiled, clean and otherwise properly cared for. Points on voltage regulators require occasional cleaning and filing with a small flat file to improve contact. Cleanliness in this department must be insisted upon, not only for the sake of appearances but also as a safety measure. See that all exposed appliances and contacts are properly guarded, especially high tension equipment, also that rubber gloves are provided for emergency use, and a first aid kit for treatment of burns, etc.

Most all paper mills have a central point or place in the form of a receiver or hotwell where all returns or condensate lines converge and make up water added for feed water and other purposes.

In some mills the exhaust from engines is piped to paper machine driers with a relief valve piped to the atmosphere. It is a much better plan to pipe all relief valves to a common exhaust line so that all surplus exhaust may be conveyed to a common feed water heater of the open type, where it is brought in direct contact with the incoming make-up water so that no heat is wasted. Also all condensate from machine driers, heating coils, economizers, etc., should be piped to hotwell or receiver where it may be returned to boilers. A good place to introduce boiler compound into feed water to counteract scale forming impurities, is in the pump suction between hotwell and feed water pump. No branch lines for any purpose should be taken off feed line to boilers, such branches are a source of both annoyance and danger, and must not be tolerated. Hotwell should be blown down at least once a week, and thoroughly washed out twice a year at least. See that all make-up water is well filtered through sand filters or all foreign matter otherwise removed before it goes to hotwell. All filtering systems require careful and intelligent attention and must not be neglected or left to the care of someone that does not understand the importance of the operation or for some other reason fails to keep everything in proper working order at all times. Remember that the best way to keep dirt out of your boilers is not to let it in.

If we were starting up a new mill or if we were about to star, up an old mill that had been down for sometime, it would appear that the next step would be to get the ground wood mill going, and if we had a sulphite mill in connection with the plant we might want to get the wood room started up and get some chips into the digesters. But if we plan to keep our plant in operation we must have a repair department. Equipment will wear out and must be repaired or replaced and maintenance must be kept up. So we must have machinists, pipers, millwrights, painters, a tinsmith, a welder and several helpers for various lines of repair work.

It is not enough to have a master mechanic and a boss piper and a head painter with various squad bosses. We must have an organization. If we are fortunate enough to have the right man for the job one of the right calibre and training we are fortunate indeed. Such a man should be placed at the head of the department, given supervision over both power and maintenance as by so doing repairs and maintenance work in the many various departments may be so coordinated that much greater satisfaction will result and repair costs kept at a minimum. When necessary repairs are left to the heads of the respective departments, it invariably results in increased overtime and Sunday repair costs, as the department superintendent is interested first of all in his own department, therefore, calls for mechanics for repair work at times when it best suits his convenience, regardless of how it effects other departments.

The number of repairmen necessary in any plant depends of course on the size of plant, amount and kind of equipment. Age of equipment also has a direct bearing on the matter.

In a paper mill operating 10 paper machines, 8 digesters, 4 grinders, 34 beaters and numerous Jordans and refiners, an organization of which the following is a brief outline has been found to give good results.

The superintendent of power and maintenance has charge of power, repairs and up-keep of all departments. Responsible to him is the master mechanic, foreman piper, head oiler, fire protection equipment inspector, boss painter and repair shop foreman. In so far as possible all work is handled through the master mechanic. A permanent repairman is placed in each department. Two millwrights and one piper on the paper machines. One man on beaters and Jordans, one man and helper in sulphite mill, also one piper and one millwright in wood room. One repairman and one brick mason with helper in boiler house, and one millwright in grinder room, that also cares for deckers, screens and wet machines. These men are permanently fixed in their respective departments for the purpose of keeping equipment in first class running order. They are instructed to call on the master mechanic for additional help only in emergency cases, accidents to equipment etc. The frequency of such calls is a measure of a man's ability and fitness for the job.

In addition to those mentioned it has been found to be a paying investment to have a general all-round mechanic on each of the night shifts.

All major pieces of equipment are numbered so that accurate up-keep costs may be kept, also record of service. It is not enough to approach the management with the information or advice that a certain piece of equipment should be replaced with new because of the cost necessary to keep it in operation due to frequent repairs. What the management wants to know in such cases is just what the cost per month or per year is in dollars and cents. He will then be able to make an intelligent decision as to the advisability of replacement. In order to obtain accurate information it is necessary that all such equipment be numbered, so that all labor and repair material may be charged to such equipment by number thereby facilitating the keeping of accurate accounts and records.

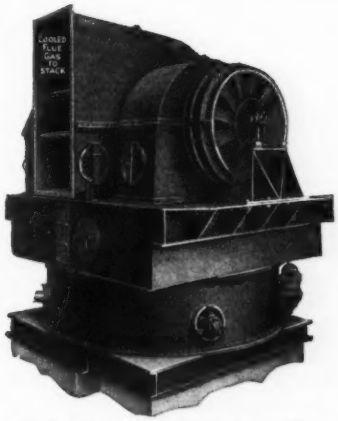
Each job is given a number when the repair or work order is

Is 50 to 100% Annual Return on Investment attractive?

You can get it with the Ljungstrom Air Preheater applied to existing or new boiler equipment

IN these days of stiff competition, high fuel and labor costs, and high temperature flue gas from high-pressure and highly forced boilers, waste heat recovery and utilization as preheated combustion air offer you an outstanding opportunity—at the only point in the heat cycle where substantial economy improvement is still possible.

70 Per cent waste heat recovery in any plant with average to high load and use factors is obtainable from the Ljungstrom Air Preheater under conditions that assure repayment of preheater costs *within from one to two years,* and thereafter a *50 to 100 per cent net cash annual money return.*



Type CAN Ljungstrom Air Preheater with Integral Forced-draft and Induced-draft Fans

The scroll fan housings in connection with axial fan wheels greatly increase fan capacity and decrease operating power requirements.

Built also in vertical and horizontal types for use with independent forced-draft and induced-draft fans. The horizontal type handles flue gas temperatures up to 1600 deg. Fahr.

Only with the Ljungstrom continuous regenerative counterflow principle and Ljungstrom quick-acting heating surface can you get this high recovery and its maximum benefits from apparatus of minimum size, weight and commercially profitable installation expense.

The practical degrees of heat recovery and air preheat, the fuel saving, the capacity increase, the preheater installation and operating costs, and the net money value of the preheating equipment as a profit producer can be computed accurately in advance, and our guarantees have been proven conservative in countless plants to which we will refer you.

Ljungstrom Horizontal Air Preheater for temperatures up to 1800 deg. Also obtainable with integral forced draft and induced draft fans.

Give us data on your plant so we can submit figures and send the latest Ljungstrom booklet. Over 800,000 boiler hp. of Ljungstrom Air Preheaters in service in the U. S. A.

Why Ljungstrom Preheaters should be installed in any progressive pulp or paper mill

10 to 14 per cent fuel saving without decrease of steaming rate

10 to 15 per cent more evaporation without adding more boilers

Smoother boiler operation under all conditions

Quicker, more complete combustion. Less soot and smoke and less combustible in the ash

Advantageous with any fuel—low-value coal, powdered coal, oil, gas, refuse, bagasse, etc.

A few typical users:

West Va. Pulp & Paper Co., Tyrone, Pa., Covington, Va., Piedmont, W. Va.

International Paper Co., Berlin, N. Y., Piercefield, N. Y., Niagara Falls, N. Y.

Chesapeake Corporation, West Point, Va.

Bogalusa Paper Co., Bogalusa, La.

Union Bag & Paper Power Corpn., Tacoma, Wash.

Fitchburg Paper Co., Fitchburg, Mass.

Algonquin Paper Co., Ogdensburg, N. Y.

Hummel-Ross Fibre Co., Hopewell, Va.

Kalamazoo Vegetable Parchment Paper Co., Kalamazoo, Mich.

Champion International Co., Lawrence, Mass.

Albemarle Chesapeake Co., West Point, Va.

Monadnock Paper Mills, Bennington, N. H.

Canadian Paper Co., Windsor Mills, Que.

Canadian Paper Board Co., Ltd., Montreal

Backus-Brooks Co., Kenora, Ont.

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Ljungström AIR PREHEATER

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CONTINUOUS REGENERATIVE COUNTERFLOW

made out. All labor and material is charged to the number shown on order. All requisitions for material or storehouse also carry this number. A workman before starting on a job, fills out job record card with his name and job number and registers the time on job record clock which stamps on the card the time of starting work on job. When job is completed card is again placed in clock and time of stopping work is registered. The time as shown by job record cards plus material charges gives a complete record of cost of job. Upon starting the day's work, workmen are required to be ready for work with necessary tools etc. before registering on clock. At quitting time they must register before washing up. These job record cards must check with the time as shown by the regular time card.

When a workman reports at the pay booth he does not expect to be paid 90 cents where a dollar is due. By the same token no company should be expected to accept 50 minutes for an hour's work. Records are also kept of all shop work by this same method. A planning board upon which all job orders are posted opposite a workman's name is a big factor in speeding up work as when one job is finished, the workman makes out a new card for the job listed opposite his name and proceeds to carry out instructions without loss of time. A planning clerk is employed to list work, post orders on board in the order designated by master mechanic, keep records, etc.

Any system to be successful must be thoroughly sold to those upon whom we must depend to put it across. It must be thoroughly thought out before making any attempt to put it in operation. There is always someone ready to advance some extreme condition or circumstance to show why the thing is not feasible. We must therefore be prepared to get back of the thing and see it through in the face of all opposition.

There is no man in the repair department that is of greater importance or may be of more assistance in keeping down repair costs than the head oiler if he is of the right type, and it is all important that such a man be of the right type.

He must be thorough in his work, dependable and have a good working knowledge of lubricants and their application. Abuse of lubricants will result in very great waste of oil and grease. Lack of sufficient lubrication on the other hand can result only in costly repairs, replacements and lost production. The matter of lubrication in a large plant is one that involves a big expenditure and therefore deserving of considerable thought and study.

With the wheels ready to turn and equipment well oiled, repair crew organized, we may as well take a look at things in the mechanical pulp department. Here we may find either two or four foot grinders. They may be pocket grinders or magazine feed. And may be driven by motors or connected directly to water wheel shaft. Regardless of type or source of power the important thing is the condition of equipment, especially the grinder stones. Before looking over the stones that are in service it would be well to look at those in storage. Spare stones should be under cover where they will be kept dry and should be kept at a fairly uniform temperature. They must not be subjected to extremely low temperatures. Stones should be frequently turned during time they are kept in storage. Care must be taken in handling to prevent damage due to dropping or otherwise.

The stones in use may be found to be natural quarried stones or those of artificial make,, and if for four foot grinders will be from 50 inches to 60 inches in diameter with 48-inch face. As the wood is ground, the stock is fed through screens having slats or openings of from ¼ inch to ¾ inch to remove the larger pieces that find their way through. This stock must be diluted to not more than one per cent consistency for best results. After passing through the coarse or as is commonly called the bull screen, the stock is passed through a riffler to remove sand and grit that comes from the wearing away of grinder stones. It is then passed onto the regular screens which may be either centrifugal or diaphragm type. Before going to these screens the stock must be further diluted to about 0.25 per cent dry. After screening, the stock is pumped to deckers or thickners where part of the water is removed, from there it goes either to storage tanks or direct to beaters. Also after leaving screens the stock or any part of it may be pumped to wet machines to be taken off in laps either for shipment or storage.

The things to watch out for in the ground wood department are condition of stones, peripheral speed of stones, pressure of wood against stones, temperature and consistency of stock at grinders, condition of screens, speed and stock consistency.

If the stones are not kept properly sharpened, then in order to get capacity, pressure on stone is increased so power consumption per ton of product goes up. Whereas if stones are kept in proper condition the yield per horse-power is greater and quality of product improved.

Power consumption is lower and production higher for green wood than for seasoned wood. Ground wood pulp cannot be stored for any great length of time without suffering serious deterioration from decay.

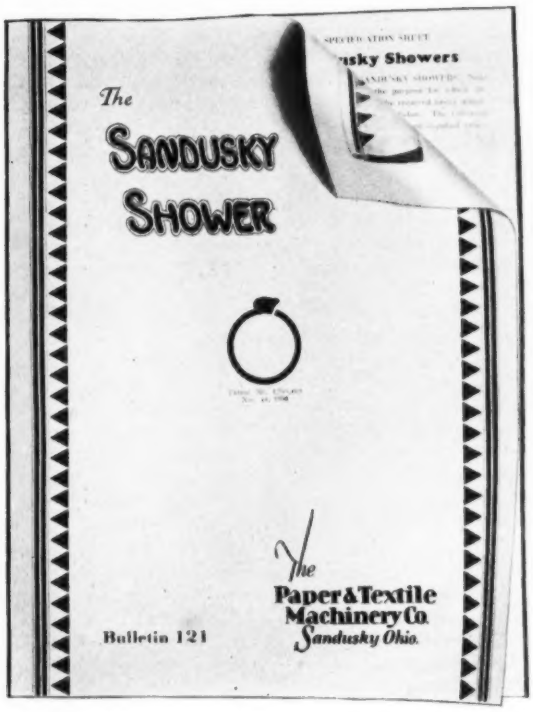
It is desirable that grinders, that are driven directly from water wheels be equipped with a governor to automatically control speed when pressure is removed or reduced on grindrs. Many stones are without doubt lost due to excessive speeds. Means should also be provided to prevent pressure from going beyond a pre-determined limit either by a relief valve or by some other means.

It is of course understood that white water is used for thinning stock, showers etc. to keep fiber losses down.

See that wires on deckers and felts on wet presses are kept in good condition. Also see that all screen plates are properly inspected from time to time and that they are of the right cut for the kind of stock it is desired to furnish the paper mill. Don't forget that clean paper cannot be made from dirty stock, therefore cleanliness is or primary importance.

We cannot devote too much time on details of any one department so with a word of advice and council to the department superintendent we will stroll along to the sulphite mill. Here we will take the first thing first and follow the wood from the yard to the stock tank.

Every plant will be found to have it's own characteristics so that the method of piling and handling wood depends very largely on local conditions. But the cost of handling may easily be excessive if method of piling is not given due thought. If stored wood is found to be peeled the wood room operation is somewhat simplified. If it is still in the rough state then we must remove the bark. Before the wood is ready for the chipper it must be barked and it must also be as clean as it is possible to make it. If it is in the winter season snow and ice must be removed. For the latter operation a hot pond is usually provided where the water is kept at a temperature sufficient to remove snow and ice during the time it requires wood to pass through pond on way to wood room. After the wood reaches the wood room the first step is to remove the bark either by passing it dry through a drum barker or on disc barkers. In the former case the bark is removed by revolving the drum causing the wood to tumble and roll upon itself thereby knocking off the greater part of the bark. The bark thus removed falls into a hopper or conveyor under the drum from which point it is conveyed to the boiler house to be used as fuel. From the dry drum barker the wood is usually conveyed to a washing drum where the first operation is repeated. In this case however the drum is partly immersed in water so that in addition to removing the bark the wood is also washed; much sand and grit is removed in this way. Bark etc. from this drum is also conveyed to boilers, but this bark being so wet, means of removing water must be provided by pressing or drying before it can be efficiently burned. Don't forget that a thousand heat units



May we send YOU a copy?

Bulletin 121 is just off the press.

One page shows a photograph of the Sandusky Shower in action—together with a close-up view and brief analysis of its construction.

Another page explains the different styles of showers best applied for various situations.

Still another—with carefully drawn layouts of paper machines—elaborates upon installations and shows precisely the recommended positions for shower pipes.

This bulletin should be in your hands for reference and for convenience in ordering shower pipes.

Why not tear out this memo and send it along right now?

The
Paper&Textile Machinery Co.
Sandusky Ohio.

Memo.: Please mail Bulletin 121 to:

Name:_____

Mill:_____

is a thousand heat units whether obtained from coal, oil, wood or what not, so that heat obtained from mill refuse is just so much saved from the regular fuel supply.

Provision must be made so that all wood that has not been sufficiently cleaned of bark may be returned to the drum for further cleaning. Small particles of bark, knots, etc. may be removed with a hand axe and passed along to chipper. Large sticks that are too big for chipper must be split into pieces of a size to be easily handled; for this purpose a splitter must be provided. All wood that is rotten or otherwise unfit must be culled out.

The chipper knives are usually set to cut chips from 5/8 inches to 3/4 inches long depending on the kind of wood we are using.

From the chippers the chips are conveyed to a screen where the sawdust is removed and knots and slivers screened out before going to storage bin above digesters. These storage bins are usually constructed above digesters, fitted with gates and hoppers for the purpose of easily filling or discharging of chips to the various digesters.

Now the various methods of cooking and the different results obtained as to degree of hardness of stock, strength of fibers etc. is far beyond the range of this article. The thing we are at present interested in chiefly is the general routine and sequence of events, so that the making of acid and cooking of chips is left to the sulphite superintendent. We, therefore, watch the operation of filling the digester with chips. These chips should be well packed by means of air, steam or mechanically so as to get the greatest possible yield per digester.

After the digester is filled with chips the cover or cap is bolted in place. The acid is then added, steam is turned on, and the cooking process begins. The length of time and manner of cooking is determined by the kind of pulp we wish to produce which in turn depends on the kind of paper we are making. It might be stated however, that greater yield is obtained from a long cook than from a short cook. The rate of penetration increases rapidly with increased acid temperature.

Acid concentration in the digester depends entirely upon temperature and pressure.

The type of temperature curve has a very great effect on the quality and yield of pulp. Digesters must not be brought up to high temperature before liquor has had time to penetrate or result will be chips with hard centers with a red or brown color and increase in tailings from screens. To get a softer pulp we must cook off at a higher temperature and lower iodine test.

After the wood in digeser is cooked it is blown to pits from which it is pumped to screens where it is screened through screens of the proper cut. From there it goes to thickeners where a portion of water is extracted before being pumped to storage tanks or wet machines to be taken off in laps for storage or shipment. All tailings rejected by the first screening process are again screened before being allowed to go to waste. As in the ground wood department care must be taken to reduce waste by using white water over and over.

The big thing in the sulphite mill is to know what you want for the grade of paper you are making, whether you want a non-bleaching or easy bleaching, hard or soft stock. A good sulphite man is always able to satisfy your demands.

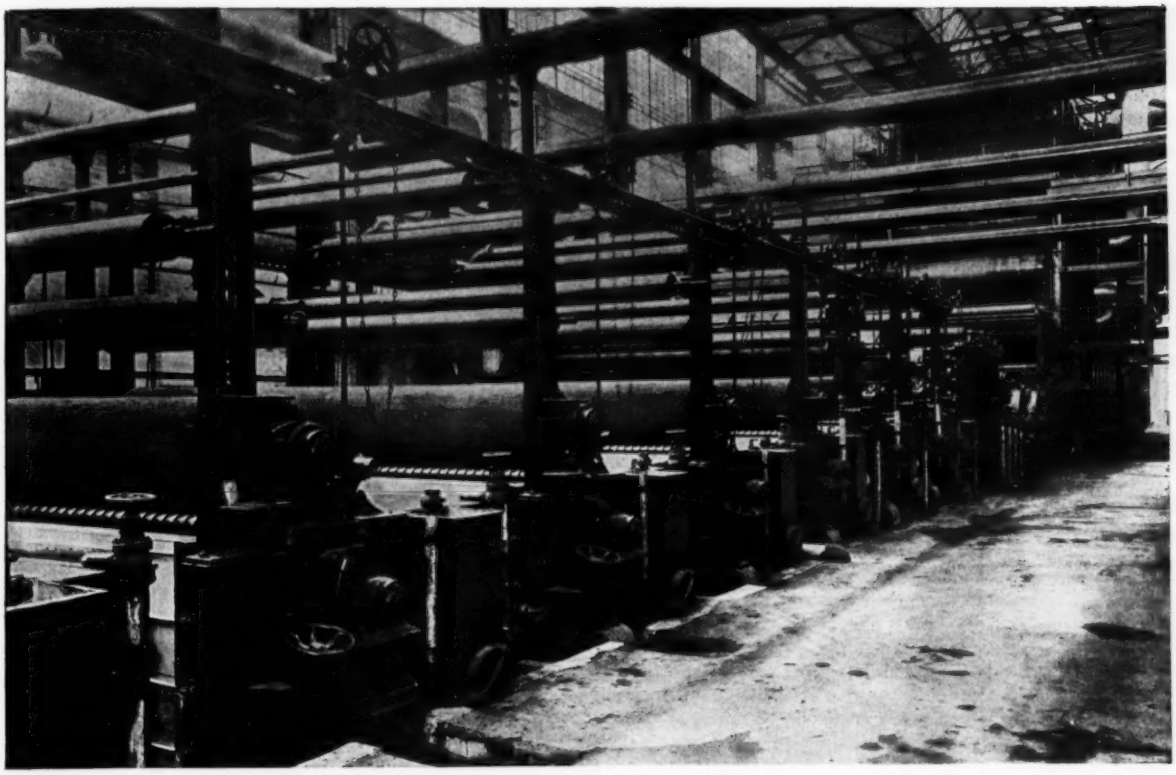
The making of acid for uses in the cooking process is a continuous process as long as sulphite mill is in operation. One system that is meeting with much favor in this country for the making of acid or cooking liquor for the sulphite process is that known as the Jenssen system. As this is the system with which the writer is most familiar we will confine ourselves to this system only, although there are several others of perhaps equal merit.

The Jenssen system employs two or more towers but usually two. These two towers are filled with large pieces of lime rock up through which the gas is forced where it mixes with the acid that flows over the lime rock from the top of the towers. The first tower which absorbs from 75 to 95 per cent of the SO_2 from the burner is called the strong tower while the other tower is known as the weak-acid tower as only the gases that are unabsorbed in the first tower pass through the second. This gas is formed by the burning of sulphur in the sulphur burner with the proper mixture of air to form SO_2 gas. If too much air is introduced SO_3 is formed. Also the air must be dry as moisture tends to form sulphuric acid. From the burner the gas passes to a combustion chamber and from there to the cooler where the gas is reduced from a temperature of around 800 deg. C. to a temperature as low and as quickly as possible to prevent the forming of flowers of sulphur. After passing through the cooler the gas is discharged by the use of a lead fan directly connected to a variable speed motor to the strong acid tower, then through the weak-acid tower, thence the acid flows to a settling tank from which it is pumped to the storage tanks for use in the digesters.

Some of the things to watch out for in the acid plant are: Constant supply of sulphur to burners, proper regulation of air to burner, temperature of gas entering and leaving cooler. See that lining of towers are kept in good condition by frequent inspection. This also applies to digester lining for if acid is permitted to penetrate lining so that it gets to digester shell the metal will be ruined in a very short time and digester rendered unsafe for further use, involving expensive repairs.

The next point in our circuit of the plant will be the beater room where the stock is being prepared for the paper machines. The beaters perform a very important function in the preparation of the stock for the machines on which it is to be run as it is here that the stock not only receives the proper amount of hydration but also the coloring and sizing. It is here the proper furnish is supplied for the grade of paper to be run on the machine. It is important that the stock supplied in the form of slush be kept at a constant consistency and should not be less than 3 per cent. Motion recorders attached to lighter bars on beaters that record position of rolls and time of beating are almost indispensable for the proper control of stock. Temperature recorders are also of very great value for the same reason. Rolls should be kept properly ground by the use of sharp sand or quartz. Bed-plates should be removed for inspection occasionally and wood chipped when found necessary before grinding in bars. See that water is kept in beater when not in use and roll turned daily to prevent drying out otherwise grinding will be found necessary when again placed in service. If beater is to be out of service for a few days see that it is thoroughly washed out. A regular inspection should be made of Jordans and refiners if satisfactory results are to be obtained. Where Jordans are directly connected to motors it has been found to give better results and prolonged life of bronze filling if direction of rotation is reversed every two weeks. If a number of beaters or Jordans are driven from a water wheel a recording tachometer will prove a good investment as it not only serves to prevent waste of power by overspeeding but is an aid in beating control. The freeness or as it is sometimes called the slowness tester should be made constant use of in the preparation of stock in the beaters as it has proven itself to be an invaluable guide.

We are now back to our starting point having covered but briefly some of the essential points in the different departments. As it was assumed in the beginning that we had spent several years on a paper machine having worked up from spare hand to machine tender we need but touch briefly upon machine operation. It too often occurs however that machine tenders know very little about machine room equipment such as vacuum pumps, stuff pumps, fan pumps, etc. and the laws governing the operation of each, without which no man can hope successfully to supervise paper mill operations. Also the action of the steam in machine driers. Time spent in the study of these things will



164-inch seven cylinder paper machine in Manayunk mill of Container Corporation of America. To save floor space, the Dryer rolls are arranged in three groups, the second and third being above the first.

Is Your Equipment Modern?

MOORE & WHITE influence in the field of paper making machinery is shown not only by the number of Fourdrinier and Cylinder paper machines now in service, bearing the M & W nameplate, but by the numerous accessory devices originated or improved by M & W, and now regarded as standard.

Among these devices are the modern Fourdrinier shake; the automatic wire guide and felt guide; the revolving reel stand; the four-drum winder; the paper cutter with variable-speed revolving head; the mechanical lay boy; and numerous improvements in details.

The pressure for better methods was never so great as today. If your machinery is limiting your output, or is putting an undue burden on your operating costs, we shall be glad to analyze the situation and suggest rebuilding or new equipment as needed.

No obligation will be implied by your inquiry.

Paper Machines
- Fourdrinier
- Cylinder

Drum Winders
- 2-drum type
- 4-drum type
- Rewinders

Slitter Parts
Lay Boys
Cutters
Backstands
"Criss Cross" Showers

Other specialties for paper making

THE MOORE & WHITE COMPANY
Established 1885
PAPER MACHINE BUILDERS
15TH ST. & LEHIGH AVE. PHILADELPHIA, PA.

prove both interesting and profitable. All table rolls should be kept rotating not only because of their action in removing water which is important but if rolls are allowed to remain idle they become flattened due to the friction of the wire passing over and if put in motion after this happens they tend to destroy the formation of the sheet, as at each revolution of the roll as the flat place strikes the wire it tends to agitate it as though it was struck a light blow—thinning the web at this point.

A consistency regulator to regulate the consistency of the stock as it is fed to the machine is of very great value in keeping the sheet at the desired weight basis. It is important to take frequent freeness readings of stock as it goes to the machine chest so that any change may be compensated for by the correct manipulation of machine Jordan before the stock reaches the wire.

A surface thermometer for taking the temperature of drier surfaces should be used for the detection of water in driers, which when found should receive prompt attention. Many old machines equipped with buckets for the evacuation of water from driers have been remodeled or rebuilt and driers speeded up to a point where such exacuators can no longer function due to the action of centrifugal force overcoming gravity. They should therefore be removed and syhpons installed. A big saving in steam and increased production will result.

Careful attention must be given to exhaust separators to prevent oil that is present in engine exhaust getting to driers which would soon become coated with a film of oil.

The fact that mechanics are employed to keep equipment in operating condition, and also that oilers are employed to keep equipment properly lubricated must not relieve machine operators from the responsibility of seeing that these things are done or much lost time will result in addition to increased repairs and maintenance costs.

See that all reports are properly made out and all lost time and paper properly accounted for. Also if felt roll bearings are kept properly wrapped the bill for damaged felts will be greatly lessened. When machine clothing is damaged a complete report as to cause should accompany machine tender's report. In a great many cases a breakdown in some other department that would be classified as, carelessness, neglect or just plain ignorance would be permitted to pass as an accident on a paper machine. Accidents will happen it is true, but let us get the facts.

Very often a considerable saving may be made if proper consideration is given to arrangement of weighing scales, finish benches, runways, etc. in the finishing room. This is also true of the sheet cutting and shipping departments.

Sometimes a slight rearranging of help will result in improved quality of paper and increased production.

Upon taking over the supervision of the paper machines in addition to other duties in a certain paper mill, the writer found out that most of the paper that was made that was of inferior quality was made on the night shift. Investigation showed further that it was made mostly on the last tour between midnight and morning. The paper mill superintendent and one boss machine tender worked from 7 A.M. to 6 P.M. The night superintendent worked from 6 P.M. to 7 A.M. Now it is a well known fact that the vitality of humans is at its lowest ebb between these hours. The result was that just at the time the night superintendent should be giving his best attention, the time when it was most needed, his long hours and never ending duties found him pretty well tuckered out and unable to give the personal supervision required.

By changing the hours of these men so that the paper mill superintendent worked from 7 A.M. to 4 P.M., one night superintendent from 3 P.M. to 12 midnight and the third man from 11 P.M. to 8 A.M. the long 11 hour day and longer 13 hour night was eliminated. Each man now works only 9 hours with the very important advantage that each man coming on tour spends an hour with one going off duty, thereby giving them an hour together to go over the machines and talk over their problems. The effect of this change was an immediate improvement in conditions, besides giving the boss machine tender a greater field of activity and an opportunity for further development.

The keeping of records of all operations and daily reports from all departments is of vital importance in the successful management of any enterprise. See that records of press rolls, density of rubber, crown, date of installing, grinding and dimensions are carefully recorded, also pressure rolls, calenders, felts, wires, etc.

Get daily reports from steam plant, fuel burned, water evaporated, steam generated to mill, evaporation per pound of fuel, average steam pressure, efficiency, etc. Also report from electric power plant, power generated, bought, sold, cost per K.W. hour, steam used and all important facts. See that steam engines are indicated once a week and analyse cards for valve setting, load distribution, leaks, horse power developed, and compare with last cards taken; if load has increased or decreased, find out the cause. Very often the unnecessary speeding up of a pump will increase the power demand which draws on the fuel supply.

See that motor readings are taken frequently and load factor checked. The occasional testing of insulation on both motors and feeders will often prevent serious breakdowns in electrical equipment. Whenever possible, all steam and electric power used in the different departments should be metered and department superintendents held to account for it's use as in a great many cases the difference between use and abuse means the difference betwen profit and loss.

A well equipped laboratory under the supervision of a well organized technical control department is of immeasurable value to any up to date paper mill. Experiments may be carried out in the laboratory at a very small fraction of the cost demanded of actual practice on machines.

A man may be a very successful department superintendent but it does not necessarily follow that he will prove a successful mill manager. No man can excel in all things, it is therefore necessary that we cultivate the confidence and good-will of those with whom we deal and upon whom we must look and depend for the successful operation of the many departments with which we have to deal. Invite suggestions, let it be understood that suggestions regarding ways and means although not always adopted will always receive careful and courteous attention. Do not overlook the young technical graduate or fail to note and encourage progress. He has the thing that probably you are lacking in and if not today at least some day he may give you just the information you must have to solve some vital problem. You cannot hope to succeed unless you get all employees working with you instead of for you. A man may work for you indefinitely and only do merely what is required of him but if you get a man working with you, he not only does what is required of him but as much more as he is able to accomplish.

It often happens that good men reach responsible positions but because of lack of the necessary training or knowledge of office work they cannot hope to go higher, whereas a few hours a week spent in the study of cost accounting and office routine would overcome this obstacle and equip them with the knowledge necessary for the successful management of the entire plant.

Much has been said and written of late regarding the present business depression and the vast amount of unemployment. Much of the present unemployment has been blamed on this so-called machine age. It is true that machines are competing with other machines, they are also competing with man power or muscle. There is no machine competing with brains or intelligence. The thing behind any machine is the brains of one or more men. So the thing we must all compete with today is not the machine or machinery of a so-called machine age, they are all man made. It is the thing behind the machine. Call it brains, intelligence, power of reasoning or what you will, it's there and it's there for our good and for universal development. It is up to us to improve ourselves so that we may keep pace with the times and use and enjoy the things that greater minds have conceived and developed.

IN CHINA . . .

It's Beaters and Jordans "*by Jones*"

Eighteen hundred miles up the Yang-Tse River, through pirate-infested waters, to Hankow, China, Jones paper-making machinery traveled in perfect condition from our Pittsfield shipping platform.

Under the direction of Jones engineers, with the Boxer Rebellion about to break out, a complete paper mill was erected for the Chinese Government. In the face of constant vexation, American ingenuity triumphed. Chinese superstitions, for instance, dictated that the chimney be built first and that the mill be built around it.

The Jones men on the job utilized cooley labor in assembling Beaters and Jordans. These "boys" pitched in and moved 6-ton Beater Rolls smoothly into position. That they enjoyed the pleasures of genuine accomplishment is evidenced by the photographs to the left.

When the job was finished, China had a real paper mill, Jones-equipped, ready to turn out Government currency, board and official papers. E. D. Jones & Sons Company had another satisfied customer.

At Home, Too

Seventy-five years of experience have put genuine significance in the two words "*by Jones.*" Paper men at home know that this signature means the nearest approach to perfection of which the human machine is capable. Why not put your problems up to us?

E. D. JONES & SONS COMPANY

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INVENTION IN THE PAPER INDUSTRY

In the history of every industry there have been periods in which invention has played a more prominent part than usual in bringing about radical new developments which have profoundly affected capital investments, changes in location of the industry and control of markets.

These periods of rapid change in the industry due to the progress resulting from new inventions, have not usually occurred in periods of business prosperity, when the only necessary effort is to calculate profits and make plans for expansion. The adoption of new inventions usually occurs in times of business depression when there seems to be no obvious means for earning a profit.

During the periods when such conditions exist, there are more minds searching out and analyzing the basic principles on which an industry is founded. New discoveries and improvements at such times attract more interest and attention from manufacturers who have suddenly realized that something radical must be done if profits are again to be earned.

When profits have been wiped out by the over-expansion of an industry or a shrinkage of markets, as is now the case in the paper industry, and there is a large percentage of idle invested capital, it is obvious that fresh capital will not restore prosperity to business unless this capital is invested in research and the result of the research brings about radical improvements in methods of manufacture resulting in reduction of costs or improvements in products.

The discovery of new methods of operation often accelerates certain phases of manufacture and destroys others. Such new methods also stimulate certain portions of the industry and retard or destroy others because there are always certain progressive leaders in every line of manufacture who are the first to secure and develop new discoveries and perhaps monopolize them. This results in the elimination of more conservative and inefficient producers. Today, in the paper industry, many manufacturers are anxiously waiting for something to turn up that will improve their particular condition without the necessity of making any added capital investment; but they are not reaching out to obtain information on improved processes and they are even eliminating research investigators from their organizations. There are other manufacturers, however, who are alert and anxious to be the first to investigate every promising development that is brought to their attention.

During the last few years there have been remarkable changes in the location of production centers of different grades of paper, the mills being moved nearer to the sources of raw material. Mechanical improvements in the industry that affect production costs have been so great that it is difficult or impossible for the older paper mills to compete with the newer mills with higher speeds and larger units. This means a commercial struggle between the new and the old, the latter relying upon their experience and skill in the making of special products of superior quality. Such a struggle is at best a temporary one for it is but a short time before the large new mills will also acquire the special knowledge of the older manufacturers and then the smaller and older units must be shut down and abandoned.

There is one element however, that may operate to counter balance the advantages due to both capital and location and that is invention. This only applies, however, when the monopoly that invention may secure for a time, can be applied for the exclusive benefit of the manufacturers who need it the most. The major portion of the improvements in paper making have been sold freely to all manufacturers in the industry, and in a highly competitive period in the industry, the final result has not been of benefit to the paper maker but to the ultimate consumer.

Inasmuch as we are living under a capitalistic system, which of course, is the only one that will produce invention, the property rights to new technical discoveries must be properly capitalized and respected with the same commercial honesty as other forms of property. The industry is today looking to the technical man, whether he be operator, engineer or chemist, to make available in the form of intellectual property, the discoveries that will improve and cheapen all kinds of paper products or open up new markets. Those manufacturers that are fortunate enough to secure the monopoly of any invention that will actually produce a distinctive quality or a definite reduction in cost, will be able to meet competition on a more secure basis than others. Some are already in this position and they are the ones that are now spending the most money in process developments.

Viewing the subject of invention from the standpoint of the industry and its urgent needs, the question arises whether everything has been done by the manufacturers themselves that should be done, to encourage invention.

Is there a willingness on the part of every employee who has an original idea, to disclose this to his employer with the confidence that if it is valuable he will receive both assistance and compensation? Obviously not if the employer does not offer him more inducement than the expectation of a possible raise in salary. Certainly not if the employer happens to be secretly infringing some patented inventions and his employees are conversant with the fact. Perhaps the potential inventor is fearful that a patent will not furnish any real protection and dreads the expense involved in a legal defense of his rights. Such a fear is partly justified because one large potential infringer can

destroy the faith of inventors in a whole industry; because if infringement should precede legitimate licensed usage, then the entire expense of developing and protecting the invention is too large for the inventor to face, and secrecy would be the safest policy.

The general experience of inventors however, seems to be that the great majority of potential users will respect their patent rights unless the invention is of dominating importance. In the latter case they must first face both skepticism and derision and finally defend themselves from accusations of lack of novelty and be prepared for a final adjudication of these rights. The laws of the United States however, are so fair and just in protecting the rights of the bonafide inventor that if he loses his property it will probably be due to the fact that he is unable to make a proper defense of his rights.

Men with experience in the sale of inventions to the paper industry, can testify to the fact that the great majority of the men controlling this industry are in full sympathy with the inventor who can bring to them a valuable new idea, even in the early stages of its development, and that they are willing to give to him that contract protection which is essential to the confidence that inspires creative effort. Moreover, these men have no sympathy with any manufacturer who is known to infringe upon an inventor's rights, as they know that an invention of no value is not worth infringing and that if it is worth infringing, then there is bound to be some invention in the patent. The Patent Examiners at Washington are very competent men and there are not many invalid claims that get past them as the average results of patent litigation proves.

If the men in the paper industry that have the urge to create and develop, are properly informed as to just what invention is and how it should be protected and that intellectual property is capital, just as much as power and timber, then it will not be long before it will be fully recognized that there are four factors in the production of wealth, namely Labor, Capital, Management and Invention.

May Sell Harmon Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

BROWNVILLE, N. Y., March 23, 1931.—It is reported that negotiations leading towards the sale of the Harmon Paper Company to outside interests may be completed within a few weeks and some announcement is expected soon. The plant is controlled by John J. Warren, president, who recently disposed of the Dexter property of the Warren Parchment Company to the Ron-Noc-O Paper Company. The latter concern plans to take possession and start operations within the next month. The plant of the Harmon Paper Company has not been in operation for the past two years and the shutdown was attributed to unfavorable market conditions for its products. The plant has a daily capacity of about forty tons of paper.

James Salter Leaves Victoria Paper Mill Co.

[FROM OUR REGULAR CORRESPONDENT]

FULTON, N. Y., March 23, 1931.—James Salter, general superintendent of the Victoria Paper Mills Company of this place, has tendered his resignation to take effect April 1. Mr. Salter has been connected with the Victoria Paper Mills Company for the past seventeen years. He is a thoroughly experienced man on lightweight papers and has been in charge of different mills for the past 33 years. Mr. Salter leaves the Victoria Paper Mills Company with the best wishes of that concern.

Let Contract for Columbian Power Plant

BRISTOL, Va., March 23, 1931.—Fiske-Carter Construction Company of Worcester, Mass., and Greenville, S. C., will build the new power plant building of the Columbian Paper Company, officials of the plant have announced.

Work will begin almost immediately, Bristol labor will be employed, and Bristol materials will be used whenever possible, L. W. Carter, of the Fiske-Carter Company, said. The company's southern office is at Greenville and it has built many plants in the south. In Virginia, the Fiske-Carter Company constructed the Industrial Rayon plant at Covington, other projects being handled in the Carolinas, Alabama and Georgia.

No date can yet be set for the awarding of sub contracts, Mr. Carter declared, adding that there would be no large sub contracts to be let, but that "we will buy all the material possible in Bristol."

The building itself will be 50 by 90 feet dimensions, two stories high and of concrete, brick, and steel construction. A complete new boiler plant with three 600 horsepower water tube boilers is to be installed. Each boiler will be capable of developing 1500 boiler horsepower with the use of steam pressure.

The ground floor of the two-story building will be considered the basement so far as arrangements are involved although the ground floor will be above the ground level.

The basement will house the force draft fans, air ducts, ash-handling equipment, boiler feed pumps, and combustion control equipment. The upper floor will contain the boilers, underfeed stokers, coal-handling equipment, feed water heaters, and meters.

Contracts for the equipment were let February 11, it being necessary to have specifications figures before contract for the building itself could be made.

The plant, according to Mr. Trumbower, was designed for steam pressure that will permit the corporation to use turbines to generate its own electricity, using the exhaust from the turbines in process work. Later the excess electricity is proposed to be utilized in an electric bleaching plant to be built for the manufacture of bleaching agents.

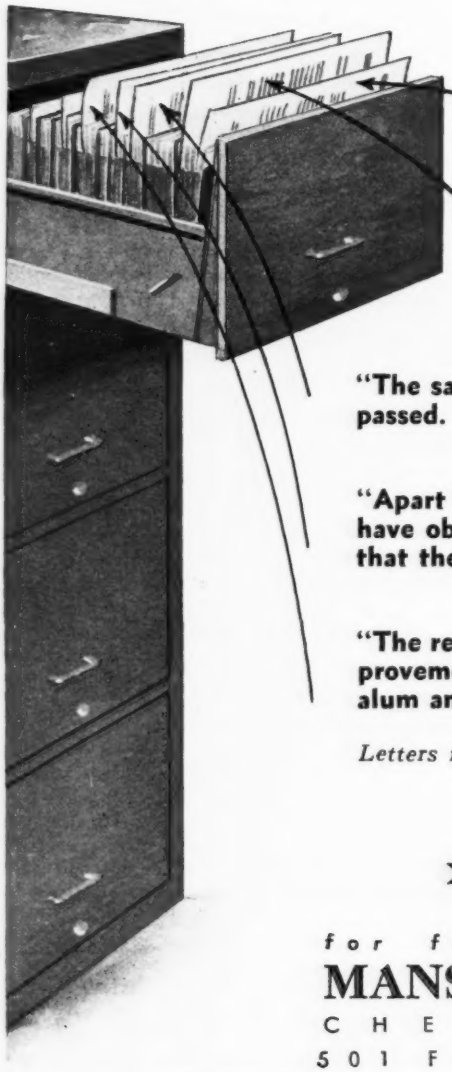
Ron-Noc-O Plant To Start in April

[FROM OUR REGULAR CORRESPONDENT]

DEXTER, N. Y., March 23, 1931—Announcement is made by officials of the newly organized Ron-Noc-O Paper Company that the production of high grade specialties paper will be started in its plant here by April 1. Following conferences with the local Chamber of Commerce the concern recently completed negotiations for taking over the idle plant of the Warren Parchment Company and the equipment is said to conform in every respect to the requirements needed for manufacturing high grade kraft paper, parchment and numerous other kinds of paper. It was announced also that it will not be necessary to install any additional machinery and the production is expected to average about ten tons daily. The plant plans to operate on full time steadily and about 35 hands will be employed at the start.

Officials of the firm spent the past week here making ready for the re-opening of the plant and it was learned that everything was in readiness. The recent incorporation papers showed that the company plans to manufacture and deal in all kinds of paper, paper goods, products, pulp and articles made wholly or partly of paper, pulp or fiber. John J. O'Connor, president and treasurer, has had wide experience in paper production and was at one time identified with the International Paper Company in an executive capacity. He learned the business with the Chemical Paper Company, Holyoke, and later went with the Robinson Paper Company, Bellows Falls, Vt. In 1910 he left this section to become identified with the Don Valley Paper Company, Toronto, and on leaving that concern he became superintendent of the Howard Smith Paper Mills, Ltd., Montreal. The other officers of the company include John J. O'Conner, Jr., vice-president, and E. B. O'Connor, secretary, all well known in this section.

PAPER MILLS EVERYWHERE ACCLAIM THE ADVANTAGES OF THE DELTHIRNA SIZING PROCESS



"It is certainly a most clean and simple way of making rosin size."

"—and what is most unusual in a Paper Mill, when adopting new processes, it has met with the unanimous approbation of Foreman and Workman."

"The saving rosin guaranteed by you has always been surpassed. The saving of steam and labor is unquestionable."

"Apart from the saving effected in the cost of sizing we have observed that the wires have less incrustations, and that the felts are kept cleaner."

"The results obtained have been: more uniform sizing, improvement of the color of our papers, savings of rosin, of alum and of coloring material."

Letters from Delthirna users containing the above abstracts, and many others, will be mailed on request

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AMERICAN DELTHIRNA CORPORATION

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Prerequisites for Obtaining a Valid Patent

Following is the sixth of a series of special contributions from the Patents Committee of the Technical Association of the Pulp and Paper Industry:

1. The alleged invention must be new. It must not have been previously known or used by others in this country. Prior knowledge or use in a foreign country is not sufficient to defeat a patent granted in this country, provided the patentee at the time he completed the invention believed himslf to be the first and original inventor, unless the thing patented had been described in a prior patent or printed publication.

2. It must be useful. This requirement has been interpreted to mean that the device must be operative to perform a purpose not against public morals. If a thing is only capable of an illegal use, it is not patentable. The device need not, however, be either practical or a commercial success.

3. It must be directed to patentable subject matter; *i.e.*, it must fall within the following classification:

a. Method or process;
b. Machine;
c. Composition of matter;
d. Article of manufacture;
e. Improvement on any of the above;
f. design for an article of manufacture;
g. The asexual reproduction of a newly created species of plant or tree.

4. It must involve invention over the prior art.

Prerequisites 3 and 4 are defined in greater detail in "What's Patentable in Papermaking?", Paper Trade Journal of October 3, 1929.

5. An application properly describing and claiming the invention must be filed in the Patent Office by the inventor or on his behalf and prosecuted to final allowance.

6. The inventor must not have abandoned his invention or otherwise forfeited his right to a patent. Among the many ways in which it is possible for an inventor to forfeit his right to a patent may be mentioned the following:

a. Suppression of the invention until after it is independently rediscovered by another.

b. Practice of the invention as a trade secret for two years without in the meantime having filed an application for patent.

c. Public use of the invention for two years prior to filing an application. Experimental use conducted in good faith for purposes of testing the invention is not a bar to a valid patent.

d. Placing the invention on sale for two years prior to filing an application. It is immaterial whether or not the device of the invention is actually sold, provided it is placed on sale.

e. Disclosure of the invention in a patent or printed publication two years prior to the filing of an application.

It is immaterial whether the use, sale or description of the invention in a patent or printed publication occurs with or without the knowledge or permission of the inventor. It is up to the inventor to file his application as soon as possible and he must take the consequences of his failure to act promptly. Within two years after the issuance of a patent to another, he may contest the other party's right to a patent by filing a request for an interference in the Patent Office. Every patent granted in this country is briefly described in the Official Gazette of the Patent Office and notice therein of the grant of a patent is notice to the world.

f. The securing of a patent in a foreign country by the inventor or an agent, without filing a corresponding application in this country within twelve months after the filing of the foreign application.

g. Failure to appeal from the final refusal of the Patent Office to grant a patent. This is so, whether or not the Patent Office is correct in its decision.

Bulletin Describes New Sandusky Shower

The Paper and Textile Machinery Company, of Sandusky, Ohio, has just published an interesting illustrated bulletin describing the new Sandusky Shower. The Sandusky Shower has a uniform, straight-line flushing action—a keen knife-edged sheet of water at high pressure. This original Sandusky feature provides a shower that cleans and cleans thoroughly—the true test of satisfactory operation.

The construction of the Sandusky Shower is of heavy brass pipe with heavy bronze fittings; large, strong, tight screw-joints to withstand years of heavy duty. Shower pipe fittings are subject to more frequent handling than other pipe fittings and are made accordingly. The patented design eliminates all attached, loose or projecting parts.

The shower is built to fit the machine, the paper and the water supply. Heavy union coupling secures proper location of sediment area. The shower is quickly attached in positions found most strategic for efficient cleaning.

Interested readers should write to the Paper and Textile Machinery Company, Sandusky, Ohio, for this attractive and illuminating bulletin.

Boiler Nozzles

The Lenape Hydraulic Pressing and Forging Company of Lenape, West Chester, Pa., has issued an interesting new folder regarding its "Red Men" forged steel (Van Stone Jointed) boiler nozzles.

This folder points out the savings which can be effected by using "Red Man" nozzles for boilers and other pressure vessels, and in addition shows construction features, etc. A copy will be gladly sent to anyone interested.

New TAPPI Members

Donald H. Boyce is a 1929 graduate of Syracuse University and has for the past year been working at the Government Printing Office as research chemist for the American Newspaper Publishers' Association.

Elmer C. Carter is in charge of the physical laboratory of the National Cash Register Company of Dayton, Ohio, and is the inventor of the Carter stiffness tester for paper.

Wilbur L. Cassiday is a student at the Institute of Paper Chemistry, Appleton, Wisconsin and in 1930 graduated from the University of Iowa.

Samuel Clayman has recently joined the sales organization of the Clinton Corn Syrup Refining Company of Clinton, Iowa, after having been with the National Aniline and Chemical Company at Philadelphia since 1926. Mr. Clayman is a 1917 graduate of the Massachusetts Institute of Technology and until 1926 he was a chemical engineer for the A. M. Collins Manufacturing Company in Philadelphia, Pa.

Ward D. Giles is employed by the Albemarle-Chesapeake Paper Company of West Point, Va. Mr. Giles has worked for the Rhinelander Paper Company, The Crown Williamette Paper Company at Floriston, California, and Camas, Washington, the E. B. Eddy Company at Hull, P. Q., the Port Huron Sulphite and Paper Company, and was recently boss finisher for the Continental Paper & Bag Corporation at Rumford, Maine.

William A. Hall graduated from the Massachusetts Institute of Technology in 1888 and was for 15 years managing director of the Fall Manufacturing Company at Bellows Falls, Vt. He was the organizer and first president of the Casein Company of America and was the inventor of the well known Hall process for vapor-phase cracking of petroleum. For many years he has been a resident of Paris, France and is at present engaged in introducing a fertilizing mulch paper of his invention.

Charles A. Hill has been mechanical engineer for the Mueller Brass Company of Port Huron, Michigan, since 1916, prior to which time he attended Purdue University and worked for the Chicago Shipbuilding Company, the Stirling Boiler Company of Barberton, Ohio, and the Bartholomew Company of Peoria, Ill.

Harold C. Koch is chemist for the Auglaize Box Board Company of St. Marys, Ohio, and is a graduate of Tri-State College, Oklahoma, A. and M. College and attended the University of Wisconsin. He was until 1930 an instructor in chemistry at Oklahoma A. and M. College, the University of Wisconsin and the Rose Polytechnic Institute.

Harvey Spence is general manager of the Amthor Testing Instrument Company, Brooklyn, New York, and formerly attended Rutgers College.

Francis W. O'Rourke is a graduate of the University of Maine in 1916 and is at present an engineer for the Eaton Paper Company at Adams, Mass. He has worked as chemist for the Orono Pulp and Paper Company, Canada Paper Company at Windsor Mills, St. Maurice Paper Company at Cap de la Madeleine and the Bemis Manufacturing Associates at Watertown, Mass.

Daniel L. Sherk holds the Wood By-Products Fellowship at the Mellon Institute of Industrial Research at Pittsburgh, Pa. Dr. Sherk graduated from the University of Wisconsin in 1920 and for the next five years he worked for the Acme Products Company at De Quincy, La. following which for the same period of time he was a research chemist for the Oxford Paper Company.

Edward H. Voigtman is a student at the Institute of Paper Chemistry, Appleton, Wis. and is a graduate of the University of Wisconsin. Mr. Voigtman formerly was a chemist for the Marinette and Menominee Paper Company and has worked summers in the mills of the Thilmany Pulp and Paper Company and the Mosinee Paper Mills.

William Baumrucker, Jr., a 1929 graduate of the Massachusetts Institute of Technology is a technician in the paper testing laboratory of the New York Daily News.

Loring W. McFail graduated from Indiana University in 1927, receiving his Master's degree in 1928. Following this he was employed as a chemist for the Hercules Powder Company and later for the Appleton Coated Paper Company, Appleton, Wis. He is now a member of the research staff of the Oxford Paper Company, Rumford, Maine.

Reuben B. Robertson, Jr., is chemical engineer for the Champion Fibre Company, Canton, N. C., and is a 1930 graduate of the Sheffield Scientific School of Yale University.

George Sivola graduated from the Technical University of Finland in 1920, following which he held several positions in the mills of O. Y. Ahlstrom, O. Y. Aanekoski and the Kajana Wood Products Company in Finland. During the past eight years he has been chief chemist of the Dexter Sulphite Pulp and Paper Company, Dexter, N. Y.

Frederick Streicher is superintendent of supplies for Dill & Collins Company, Philadelphia, Pa. In 1926 he graduated from Norwich University and worked until 1929 as industrial engineer for the Keith Car Company in Sagamore, Mass.

Adolph W. Waern is doing engineering work for the Champion Fibre Company, Canton, N. C. In 1894 he graduated as a mechanical engineer from Chalmers Technical Institute in Gothenberg, Sweden. Since then he has served as superintendent engineer for each of the following companies: Billingfors A/B, Bethlehem Steel Company, Joseph H. Wallace & Co., U. S. Government nitrocellulose plant at Nitro, W. Va. and the Ontonagon Fibre Company.

TAPPI Notes

Gosta Hall, technical advisor of the Swedish Pulp Company, Stockholm, Sweden is visiting in the United States.

Wilber N. Hayes, formerly laboratory foreman of the Interlake Pulp and Paper Company, Appleton, Wis., is now located at the Stevens Point, Wis. mill of the Consolidated Water Power and Paper Company.

John Traquair, Miss R. M. Cobb, W. R. Maull, R. H. Savage, Dr. R. H. McKee, R. G. Macdonald and the Washington, D. C. members of TAPPI attended the printing industries conference at the Government Printing Office last week.

Robert W. Van Kirk, formerly technical director of the Eddy Paper Company, Three Rivers, Mich., has joined the sales organization of Penick & Ford Sales Company, Cedar Rapids, Iowa.

Daniel T. McCormick who was paper mill superintendent of the Central Paper Company, Muskegon, Mich., is now with the Filer Fibre Company of Filer City, Mich.

Paul Joslyn has resigned as chemist of the Certainteed Products Company, Buffalo, N. Y. and is at present located at 918 Madison avenue, Syracuse, N. Y. and has not made definite plans for the future.

Albert E. Leighton, formerly an engineer in the Management Engineering and Development Company, Dayton, Ohio is temporarily engaged in engineering work at the plant of the Tennessee Eastman Company, Kingsport, Tenn.

Several paper mill engineers have recently visited the laboratory of D. Manson Sutherland in Trenton, N. J. to see the new attrition mill type refiner that he has developed.

John Traquair, director of research for the Mead Corporation, Chillicothe, Ohio, has been appointed chairman of the Technical Association committee on fibrous raw materials.

M. W. Bray presented a paper on March 20 at the meeting of the Railway Development Association of the Southeast in Birmingham, Alabama, on the subject, "Second Growth Southern Yellow Pines and Their Pulping Possibilities."

Flat Screen for Pulp

A machine for the screening of pulp is described in some detail in an 8-page bulletin issued by the Valley Iron Works Company, Appleton, Wis.

Synchronous Motors in the Paper Industry*

By D. R. Shoults [1]

It is a matter of more or less general knowledge that the present day synchronous motors are far advanced from the motors of this type described in most electrical texts. One of the characteristics most frequently described is that of inability of the synchronous motor to provide sufficient starting torque for the usual industrial load. Considerable attention is usually devoted to various methods of starting the synchronous motors and the reader is left with the idea that they are a rather delicate piece of apparatus not entirely suitable for general application. There has of late years been an increasing use of synchronous motors for all types of applications, but in spite of this fact, it is probable that the full possibilities of utilizing synchronous motors are not fully appreciated.

The foremost argument for the use of synchronous motors has always been their ability to operate at a more favorable power factor than is possible with induction motors. These motors may of course be operated at unity power factor or may be operated at a leading power factor to compensate for the reactive Kv-a taken by other motors in the same plant or on the same feeders. Many industrial plants have in the past utilized synchronous motors to bring their overall plant power factor up to a favorable value, but usually these synchronous motor applications were made on drives which required a very light starting torque, such as motor-generator sets, pumps and compressors and the like, which start unloaded. The result has been that certain parts of the plant have been operating at a rather high leading power factor, while other sections of the plant were operating at a lagging power factor. Although the overall plant power factor is suitable and satisfactory to the utility company supplying the power, the internal plant power factor has been very poor. This has either resulted in overloaded feeders and transformers, or has necessitated oversize equipment to carry a given horsepower load. The present trend in synchronous motor application is to apply the synchronous motors at the most favorable place for the improvement of the power factor, that is, at the source of load.

Thus mills now handicapped by inadequate feeders may secure relief by the substitution of a few synchronous motor drives at strategic points in the distribution system, and new mills may take advantage of the better power factor to reduce the electrical distribution losses.

Another very favorable point influencing the selection of the synchronous motors is their inherent suitability for low-speed direct-connected or low gear ratio drives.

The synchronous motor inherently has a larger air gap than an induction motor of the same rating, which of course tends to make the most suitable mechanical construction in motors of large diameters. The slow speed motors are inherently larger in diameter than the moderate speed motors because of the higher torque developed and the larger number of poles which must be provided.

A still further advantage of the slow speed synchronous motor is the ease with which the design details may be altered to provide special motors for any particular drive. The increase in use of fabricated steel construction in building up the stator frames and the rotor spiders allows the designer considerable latitude in designing special machines.

It is these features of the synchronous motor design which permits the manufacture and successful operation of the overhung type of synchronous motors, where the rotor of the motor is overhung on the shaft of the driven machine as is now the more or less common practice on the smaller air compressors and other similar drives. Such a practice would be unwise with the slow speed induction motor with its smaller mechanical clearances. The advantages of the overhung construction are rather apparent, that is, the reduction in weight and space requirements of the drive.

As previously mentioned, one of the old objections to the use of the synchronous motors on the usual drive was the high starting torque required on these drives. It is only in recent years that full voltage starting has been accepted as proper practice but with its acceptance came a greatly increased use of synchronous motors. One of the contributing factors to the use of full voltage starting has been the gradual increase in the size of the power systems so that the effect of the suddenly applied reactive load, taken at the instant of starting, does not cause serious voltage disturbance. The starting characteristic of the synchronous motor due to its amortisseur winding is very similar to that obtained with the more familiar squirrel cage induction motors. It is only in recent times that full voltage starting has been utilized with the squirrel cage induction motors. Because of this fact, the wound rotor induction motor was almost universally used on loads which required starting torques approximately equal to the full load torque. There was one further application where the wound rotor induction motor was used almost universally and that was an application which required the acceleration of a high inertia load. It can be demonstrated mathematically that when accelerating an inertia load by rheostatic means that the energy loss in the rheostat must be approximately equal to the energy stored in the rotating equipment. When using either a synchronous or squirrel cage motor, to accelerate such a load, the rheostat loss really occurs in the squirrel cage windings and must either be stored there or dissipated by the winding, while with the wound rotor construction, these losses occur in the starting resistor.

High Starting Torque Possible

The present day design of synchronous motors coupled with the increased capacity in generating systems make it possible to utilize synchronous motors on both of these types of application. Depending on the particular design, it is possible to obtain 100 per cent starting torque and maintain this torque from standstill to the pull-in point of 95 per cent speed with a current inrush varying between 400 and 600 per cent normal current. The stator windings of the motors are especially designed and braced to withstand the magnetic stresses occasioned by this current inrush.

Because of the fact that the torques due to the amortisseur windings are more or less independent of the synchronous char-

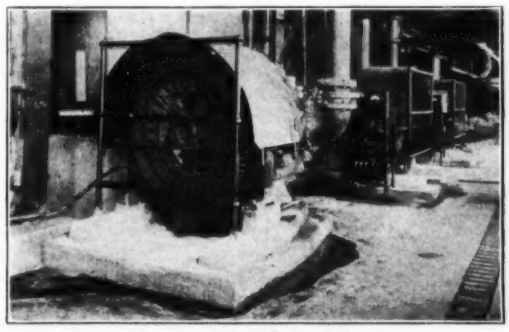

FIG. 1

Canadian International Paper Co., Three Rivers, P. Q., Can. TS 104 h.p.—221 RPM—550 volt synchronous motors driving Nash-Hytor vacuum pumps for paper machine. Rotors are overhung on pump shaft, from left to right they are for flat boxes, couch suction and press suction.

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Contribution of the Heat and Power Committee.

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acteristics of the particular motor, it is possible to vary the torque slip curve of the particular motors without influencing the normal running characteristics. The situation here is identical with that of the usual induction motor where the peak or maximum value of the torque curve may be made to occur at any desired value of slip by varying the resistance in the secondary circuit or the squirrel cage windings. Thus the designer is able to increase the torque at starting at a sacrifice of a certain amount of torque at the pull-in point or vice versa. The exact values would depend upon the particular application. With industrial loads in which friction or a dead load is the deciding factor, it would be desirable to maintain an approximately flat torque curve from standstill to the pull-in value, while with a centrifugal pump load, started with open valves it would be desirable to have a low value of starting torque with a value of pull-in torque in excess of 100 per cent.

Although the value of slip at which the maximum torque occurs can be shifted by means of the variable resistance in the squirrel cage winding, it is not possible to vary the actual maximum value of the peak without somewhat affecting the synchronous characteristics. With the normal synchronous characteristics, the value of the maximum sub-synchronous torque is more or less determined in the motor, depending upon the synchronous speed. The maximum value of torque is more or less directly proportional to the synchronous speed of the motor, although it depends somewhat also upon the actual rating of the motor. Thus most of the motors in the general purpose class from 600 to 1200 r.p.m. will have in excess of 100 per cent torque at both the starting and pull-in values. As the speed is lowered, the maximum torque available decreases so that the motors in the compressor class at approximately 200 r.p.m. have in the neighborhood of 50 per cent starting and pull-in torque. It is possible even in this slow speed class to build motors with much higher values of sub-synchronous torque but only at the expense of an increase in physical size.

Because of the fact that the actual normal torque values, due to the starting windings, bear more or less a definite relation to the synchronous characteristics and depend also somewhat on the normal speed of the motor, it is often desirable to utilize various starting methods to modify these available torques. The arrangements familiar to all is the use of an auto-transformer or compensator to reduce the voltage applied to the motor, thus reducing both the starting current drawn from the line and the starting torque. This system is usually applicable to moderate speed motors which have normal starting torque in excess of 100 per cent but which are applied to loads which require only a fraction of full load torque to start and synchronize. In this class are the motors on motor generator sets and various motors on industrial loads which start unloaded.

There have been several other recent developments in starting methods which have proven valuable. One of these is the double winding method of starting. This method utilizes a motor which has its stator wound in two parallel Y connected circuits. At starting, only one of these circuits is connected to the line, the other circuit being left open at the Y point. This serves to increase the reactance of the stator windings thus decreasing the current inrush taken from the line and also decreasing the torque value of the motor. Tests have shown that the torque obtained is approximately 50% of the starting torque with both windings connected and that the current inrush is approximately ⅔ of the current taken by both windings. As the motor accelerates and nears synchronous speed, the effect of the increased reactance decreases considerably so that the value of pull-in torque is almost as great as with both windings in the circuit. Thus, near the pull-in point, the second winding may be switched in with little or no disturbance to the power system giving a very smooth starting cycle. This eliminates one of the undesirable features of auto-transformer starting, that is the necessity of removing the motor from the line and then reconnecting a short time later. The so-called torque efficiency of this method of starting is not quite as favorable as with the compensator method because of the fact that the torque is reduced in greater ratio than is the starting current. This, however, is not usually an important factor as it is now more or less generally considered that it is more undesirable to interrupt the circuit and then reconnect, as is necessary in the compensator starting, than it is to take a slightly larger amount of current in the beginning.

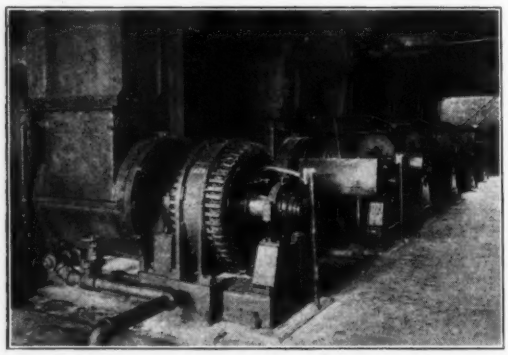

FIG. 2

Canadian International Paper Co., Three Rivers, P. Q., Can. Six 75 h.p.—350 RPM—550 volt synchronous motors driving bird screens in ground wood screen room. The screen shaft has ball bearings each side of motor rotor with screen overhung.

Korndorffer Method

A very useful variation of the reduced voltage or auto-transformer starting is the use of the Korndorffer method. The motor is started in the usual way by the use of the auto-transformer connection. When it is desired to connect the motor to full line voltage, the neutral of the auto-transformer is opened, thus impressing full voltage on the motor terminals through the reactance of a section of the auto-transformer. After a short interval this section of the auto-transformer is short circuited by means of a second contactor, thus connecting the motor directly to the line. At no time during the starting sequency is the motor removed from the line or the torque of the motor completely interrupted. This system allows considerably smoother starting than the compensator method although at the expense of slightly greater amount of switching material. It is comparable in smoothness with the two winding methods but has one additional advantage in that the current taken from the line at the instant of starting is somewhat less through the more favorable torque efficiency value.

The foregoing methods have described ways of starting which reduce the amount of torque below that actually available if the motor was started on full voltage. Due to the fact that some of the slow speed motors, unless they are made oversize, do not have starting torque equal to their full load running torque, it is desirable that some method be used to increase the value of torque obtainable. This has been done in a few instances by use of over-voltage starting. Once allowing the feasibility of full voltage starting, it is an easy step from there to use of over-voltage during the starting period. The strains induced in the motor are no more severe than if the motor were to take the same value of inrush with full voltage starting. There are several means of applying the over-voltage, probably the most favorable one being the inverted Korndorffer connection. The switching sequence here is the same as with the normal Korndorffer connection except that the line is connected to the partial tap of the auto-transformer while the motor is connected to the full winding. The motor is brought up to speed and synchronized on the excess voltage after which the neutral of the transformer is opened and the partial winding shorted out. Thus at no time is the torque of the motor interrupted completely and during the time when the reactance of the transformer is in series with the motor terminals, the voltage value is at least 80 per cent of the normal

line voltage. As this voltage dip occurs for only a few cycles, there is no difficulty in the motor carrying its full load during this period.

Other methods of over-voltage starting involve the inverted compensator, which is more or less self-explanatory, and the method of delta-Y starting. In the latter method, the normal Y connected motor is started by connecting its stator windings in delta, thus applying 73 per cent excess voltage to the motor. After the motor is synchronized, it is removed from the line, reconnected Y and again connected to the line. This switching operation may be carried out with normal control apparatus in approximately 6 cycles. Tests have shown that it is possible for the motor to carry 150 per cent load during this switching sequence without being out of synchronism when reconnected.

A still further method is the use of tapped winding starting. Thus during the starting period, the line terminals are connected to, say, 80 per cent of the motor windings and the motor started and synchronized in this manner.

Automatic Control

The use of automatic control for synchronous motors has made a great advance in the past few years. Control at the present time is practically completely automatic with a number of special contingencies provided for. It is usually only necessary for the operator to press the start button of the push button control station, after which the proper starting sequence is gone through. As the motor approaches synchronous speed, the field is automatically applied at the proper time, and the motor pulls into step. Once operating in synchronism, there are a number of factors which may cause the motor to pull out of step. One of these is the possibility of a voltage dip on the power system which, of course, reduces the amount of synchronous torque available in the motor. Severe overloads exceeding the pull-out value of the motor will also, of course, pull the motor out of step. Under this condition it is desirable, in a number of cases, to provide for continued operation if at all possible, so that the service is not interrupted. If the motor is one which is able to accelerate and synchronize while carrying the full load value of torque, it is possible to continue operation and allow the motor to resynchronize, simply by removing the field from the motor and go through the starting operation, automatically applying the field again at the proper value of the speed. The ability of the motor to do this, depends upon the motor having sufficient torque to carry the usual load on its amortisseur winding, and also on the assumption that the voltage applied to the motor is of normal value. On certain installations where the starting torques available in the motors are not sufficient to carry the load, it is necessary to provide some sort of unloading means, automatically operated, if the resynchronizing feature is to be used, otherwise the load would stall the motor. In any case, it is necessary to provide some sort of protection for the motor for unusual cases when the load is of sufficient magnitude to stall the motor or where the voltage dips reduce the motor torque below the value required by the load. At standstill the rate of energy input to the squirrel cage winding is extremely high so that the motor must be protected very particularly against this condition, if there is any very great probability of its occurrence.

Another point which must be considered in respect to the resynchronizing control, is that of time delay under voltage protection. If the control is arranged with instantaneous undervoltage protection, the motor will be removed from the line on voltage dips of very short duration although the motor might very possibly carry over the dip without losing synchronism or in any case would be able to resynchronize automatically as the voltage is restored. The addition of time delay undervoltage with a time delay of approximately 1½ seconds, will enable many installations to carry over a great percent of the usual voltage dips.

We will next consider a number of specific mill applications to call attention to the specific requirements and the possibilities for the use of synchronous motors in connection with these drives.

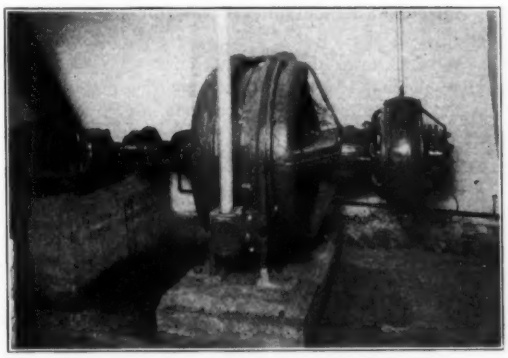

Fig. 3

G-E type TS-16, 200 h.p., 450 RPM, 2200 volt, 0.8-P-F. Synchronous motor, for full-voltage, starting, coupled to beater line shaft. Smith Paper Co., Lee, Mass.

Pulp Grinder Drives

One of the first types of drives to be considered, and also one of the largest from the point of actual size and use is that of the pulp grinder. The motors for these drives are usually connected to the driving shaft and correspondingly have a speed of rotation usually not exceeding 240 r.p.m. The sizes vary, depending upon the type and number of grinders connected to the shaft, and in a number of instances have reached sizes up to 3000 to 3500 h.p. per motor. The grinders start unloaded and if stopped while loaded may be easily unloaded. The starting torque under this condition is about 30 per cent of normal full load torque. The load itself when running in synchronism is usually considered a steady load so that there are no special requirements for unusually high pull-out torques. The inherently large size of the motors makes it desirable that the starting current be not greatly in excess of the value required to deliver the torque actually needed for starting. With a normal design of motor to meet the synchronous operation requirements the starting torques are usually in the neighborhood of 60 to 80 per cent of the normal full load torque.

In many cases the size of the power system compared to the rating of the individual motors is such that full voltage starting may be conveniently used with a resulting saving in control cost and switching complications. In other cases, however, it is desirable to reduce this inrush and any of the methods already described may be used. The two-winding method may be conveniently used to give in the neighborhood of 30 to 35 per cent normal torque for starting with the assurance that if this torque on some occasions does not start the grinder the switching in of the second winding will certainly do so. The method has the further advantage that the disturbance on the system would be less than if both windings had originally been connected to the circuit at the same instant.

Starting compensators may be used or an auto-transformer may be provided for starting a number of motors in the same mill room through the use of a starting bus.

It has often been the practice to utilize leading power factor motors for the grinders to correct for the low PF of the remaining mill circuits where large numbers of induction motors were used for the smaller drives. With the present more or less general use of synchronous motors in smaller sizes, it is doubtful if there is any reason for using leading power factor motors in this application.

Jordan and Beater Drives

Synchronous motors have been used also for a number of years for direct connection to jordans and here also the torque values have been practically standardized. The jordans are practically

always started unloaded and in any case the load may be relieved by withdrawing the plug if necessary to start after a power failure has shut down the jordan without unloading. It is fortunate that the inherent starting and pull-in torques of the sizes and speeds of motors commonly used in jordan applications are values rather closely suited to the load requirements. It is usually considered that starting torque of from 50 to 60 per cent and a pull-in torque of 60 to 70 per cent is best for this application. The pull-out torque requirements are not severe so that the values obtained with the standard 1.0 power factor motors—i.e., 175 per cent—are ample.

The starting of motor-generator sets is usually accomplished by means of compensators or auto-transformers inasmuch as the torque requirements are usually considerably less than the full voltage torques obtained in the motors. There is, however, a tendency at present to start these motors also by full voltage because of the saving in switching equipment and in complication and also due to the fact that the power systems are becoming so large that the current inrush under this condition is not a detrimental factor.

The application of synchronous motors to beater drives is a relatively recent development. A moderate speed motor of approximately 600 r.p.m., is connected to the beater through a belt or possibly a "V" belt drive. The beaters usually start empty and as such only require in the neighborhood of 30 per cent starting and pull-in torque. There is, however, a considerable possibility that the beater may be shut down full of stock and that it must be started up under load. Because of this condition it is necessary that the motor be able to develop approximately 125 per cent starting torque and at least 100 per cent pull-in torque. Through the use of the 514 or 600 r.p.m., 60 cycle motors it is possible to obtain the required starting and pull-in torque with the standard 1.0 power factor motor when using full voltage starting.

Pumps, Air Compressors and Screens

There is also a considerable field of application for synchronous motors used in connection with reciprocating air comrpessors and motor driven vacuum pumps. For these applications the synchronous motor is sometimes furnished without bearings of its own, the rotor being mounted directly upon the machine shaft. The machine builders are acting to the best interests of all concerned in selling these equipments as a complete unit, thus assuring that the various parts will act together as a unit. Pumps and compressors almost invariably start unloaded so that torques in the neighborhood of 40 to 60 per cent are sufficient at starting and pull-in.

The use of synchronous motors in connection with screens presents no particular difficulty as they are usually started light and have a steady load characteristic when running loaded. The motors being relatively slow speed have approximately the correct value of starting torque when started on full voltage so that the control is relatively simple.

Chipper Drive

The application of the synchronous motor to a chipper is a relatively infrequent one but one which has definite advantages in some cases. The chipper drive is characterized by several features, one of which is that it usually starts and accelerates without load but while running in synchronism is subjected to extreme overloads for very short duration. These peaks may reach 300 per cent or even a greater percentage of the normal rating of the drive. There is a further point which must be very carefully considered and that is the fact that the rotating part of the chipper has a very high inertia, so that the stored energy is great. This, of course, imposes a heavy accelerating duty upon the squirrel cage winding of the motor. A typical example would be a motor which would deliver in excess of 100 per cent torque from rest to pull-in speed and which, with this value of torque would require 40 to 50 seconds to accelerate the rotor. Approximately half of this k.w. input must be dissipated by the squirrel cage winding and due to the short time, the rate of dissipation into the iron of the pole pieces is very slight hence the squirrel cage winding must be heavy enough to store the heat from this amount of energy without having an injurious temperature rise in the winding.

Many of the chippers in the past have been driven by wound rotor induction motors which have given rather general satisfaction. Induction motors are at a disadvantage on direct connected chipper applications when compared with the corresponding synchronous motor.

It is also well to consider the relative operating features of the induction motor and the synchronous motor on this type of drive. As the peak load comes on with the induction motor drive the stored energy in the rotating parts help to smooth out the power peaks due to the fact that the induction motor must slow down slightly in order to develop more torque. The synchronous motor on the other hand cannot change its average speed so that the power peaks are transmitted back to the power line. If the power line is of small size and the remaining load on it of such a nature that frequent voltage disturbances would be a disadvantage, it is probable that the wound rotor induction motor would be a more satisfactory application than the synchronous motor. The synchronous motor, however, in cases where it can be conveniently used will give a better overall operating efficiency and a better resulting power factor. It must also be kept in mind that the synchronous motor can be better adapted to built-in construction.

The synchronous motor in this service must be supplied with protection so that if it is pulled out of step, the field will be removed and the motor enabled to resynchronize. Provision is also usually made to stop the conveyor feeding the chipper until the motor has resynchronized.

In case the motor is unable to resynchronize and should stall, provision should also be made to remove the motor from the line immediately.

It is hoped that the foregoing illustrations of the applications of synchronous motors show somewhat the extent to which they are now being considered for all industrial loads. Their field of applications is continually widening and they are at present being applied to any load which may be motored with the corresponding squirrel cage motors.

Materials of Construction Committee Report

The objectives outlined in the September, 1930, committee report have been fulfilled only in part. We have continued the testing of ferrous and non-ferrous alloys in the corrosion chambers of the three stations. This work has been considerably reduced in volume as compared with the previous year.

The results of the committee efforts to bring a part of the new developments in the materials of construction field before the industry may be summarized in the papers presented at this annual meeting.

We may expect a continuation of the alloy testing under the conditions of the sulphite testing chamber. The committee efforts in reviewing the ferrous alloy castings situation has not progressed to the point of publication, to date. It is hoped that work will be completed in the near future.

Our efforts on the ferrous-non-ferrous alloy systems with sulphite acids as the electrolyte are also the subject of a presentation before this meeting.

In general it may be said that the fine cooperation of the metallurgical companies during the past few years has been of value to the industry, and without doubt will continue of its own momentum.

Although we have been favored by a contribution from the carbon industry, the field of the non-metallic materials has not been carefully examined by the committee. The concentration of the attention of the committee on this class of materials during the coming year will probably yield results comparable with those attained in the metallic field.

J D. Miller, Chairman

Steam Turbines in Paper Mills *

By R. G. Standerwick [1]

The paper making industry is unique in many respects, not only as regards the technique of paper manufacture but on account of the demand which it has created for highly specialized machinery, and from the viewpoint of the turbine designer it has opened up a field for varied turbine application far exceeding any other industry.

The object of this paper is to briefly recount a number of different turbine applications in paper mills and also, perhaps, to point out the feasibility of still further useful applications.

Let us, then, start on a trip through an imaginary paper mill which contains typical examples of turbine applications. In the boiler room of the power house, we find coal feeders, boiler feed pumps, primary and induced air blowers, all operated by turbines of various sizes from 10 up to 200 h. p., taking steam directly from the high pressure boilers and exhausting into a common low pressure main from which the deaerators and often low temperature heaters take their supply of steam.

These turbines, for the most part, are required to operate over a wide variation in speed. The coal feeder turbines, having adjustable wide range speed governors are probably set manually for a certain speed.

The boiler feed pump turbines are equipped with excess pressure regulators to determine their speeds. The primary and

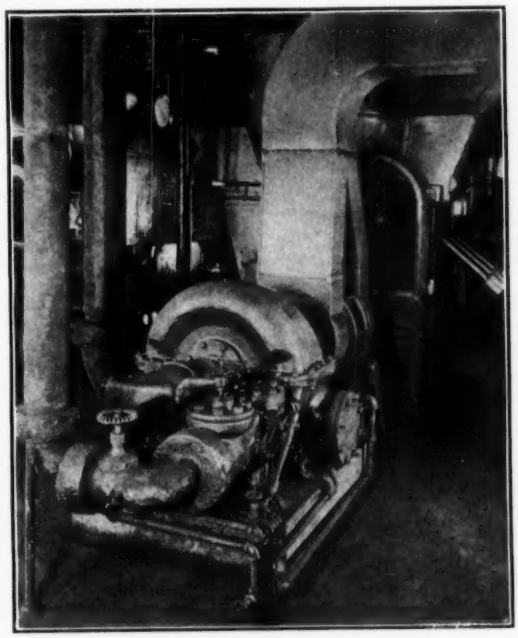

FIG. 1

2 G-E type D-54 steam turbines driving coal pulverizer.

induced draft fans are equipped with adjustable range speed governors automatically set by damper regulators and the like.

In the turbine room itself we again find a variety of turbine applications. Outside of the main generating units about which we will deal later there are in the basement small turbines for the hot well pumps, whose speed governors may be set by the water level regulators. There are the circulating pump turbines also equipped with the wide speed range governors, and then up on the turbine floor we find the dual drive exciter sets with turbine, exciter and induction motor all in line, in some instances the turbine speed governor being set to open the turbine valves in the event of low frequency or loss of power to the induction motor, and in other cases being equipped with pressure governors arranged to maintain a definite back pressure at the exhaust of the turbine when this exhaust steam is being supplied to feed water heaters.

Such combined units are also frequently used to supply the light load power demand for week-ends or holidays when the

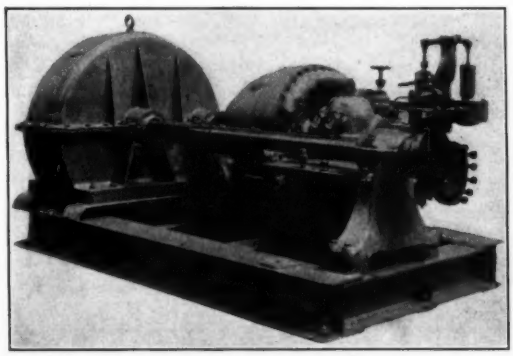

FIG. 2

G-E turbine gear set for paper-machine drive. Type D-53 steam turbine with variable-speed governor and type S-63 reduction gear for double end drive.

main turbine unit is not required, the a. c. motor in this case being of the synchronous type instead of induction type.

Now to turn our attention to the main turbine units:—These might possibly be a simple straight condensing type used only to drive the main alternating current generator, but we shall undoubtedly find that they are not, because one of the greatest advantages of using turbines in industrial plants is the ease with which steam may be extracted or admitted at intermediate stages at low pressures to supply the demands for process steam.

It is quite common practice to employ condensing turbines equipped with constant speed governing mechanisms and arranged for extraction of large quantities of steam at one, two or even three different pressures along the turbine shells.

A typical example might be cited: A 5000 k.w., 3600 r. p. m. turbine generator set is supplied with high pressure steam at 450 pounds gage, 750 deg. F. total temperature. It is arranged with valve means to permit of extraction of say, 100,000 pounds of steam at 150 pounds gage from the first stage shell—75,000 pounds of extracted steam at 35 pounds gage—10,000 pounds of steam at about 5 pounds for feed water heating, and the exhaust led to a condenser at, say, 1 inch absolute.

The 150 pounds extraction steam which is probably used for digesters is further augmented by a supply of steam from a low pressure boiler in which bark and other waste is normally used for fuel, and at such times when there is a plentiful supply of such fuel and a relatively light demand for digester steam, this boiler steam may be passed back into the turbine instead of into the process line, the control equipment on the turbine being so arranged that the demand for high pressure steam is automatically reduced as the 150 pounds low pressure steam becomes available. This transfer from maximum extraction to maximum admittance is accomplished without disturbing the speed of the unit.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of the Heat and Power Committee.

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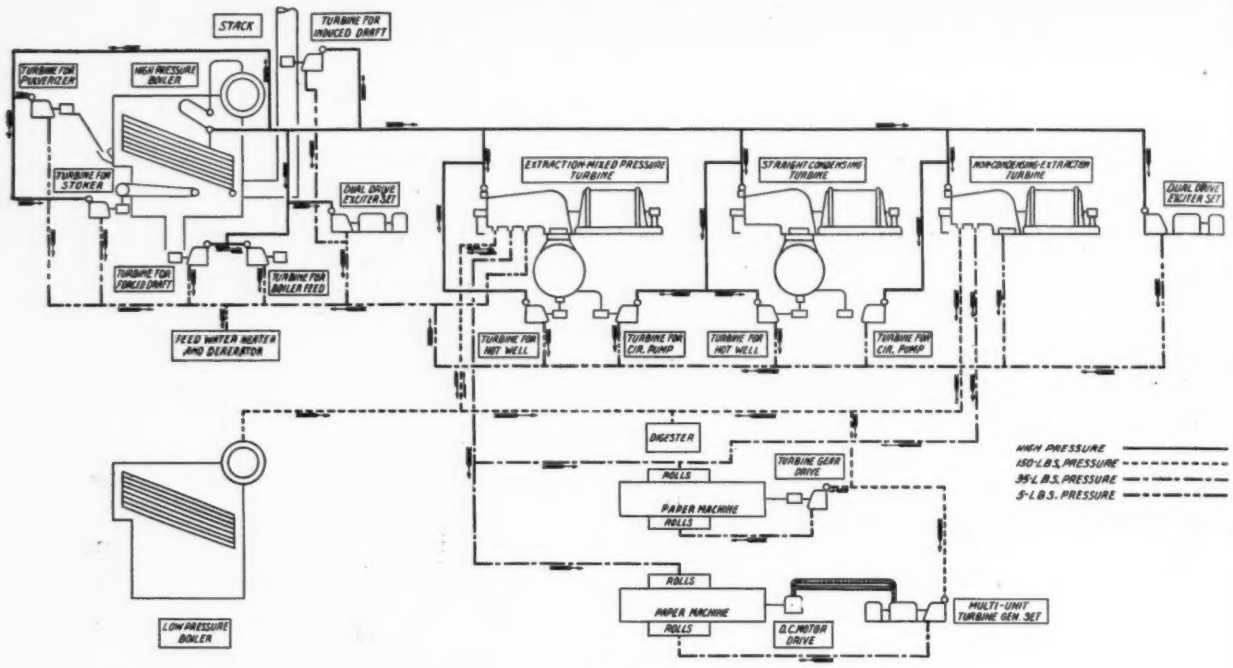

FIG. 3
Paper Mill Layout.

At the same time variations from zero to maximum in the amount of extracted steam at the 35 pounds stage, which is pressure controlled, may occur, without affecting the speed of the unit, this steam, of course, being used for the driers of the main paper machines. With such a turbine the minimum possible cost of power may be procured.

Speed Control

Just a word regarding the speed control of this unit. I made reference to a constant speed feature of this machine. By constant speed we mean a speed of 3600, for example, which does not deviate from 3600 by more than plus or minus one-tenth of a percent (three and a half revolutions per minute plus or minus) no matter what the electrical load may be nor what the value of extraction at either stage might be, up to the limit of the high pressure valve gear flow.

This statement may also be applied to possible variations of boiler pressure or vacuum which, were it not for the constant speed feature, would, of course, cause the speed to vary.

This important refinement in turbine speed control can be readily appreciated by those familiar with plant operation.

But now we must leave the main turbine room and see how our extracted steam is being utilized: We have referred to the digester requirements for 150 pounds steam of variable quantities, but this steam is also carried over to the paper machine room, where it is used by a number of smaller turbines. These are used to drive the rolls of the main paper machines through the medium of reduction gearing. They are equipped with adjustable wide range speed governors arranged for remote adjustment of speed.

Automatic Adjustment

This remote adjustment is automatically accomplished by interconnection with a remotely indicating or recording paper speed tachometer located alongside the paper machine, the setting of turbine speed being handled by paper machine foreman. Extremely close speed control is, thereby, automatically obtained even though wide variations in steam pressure or exhaust pressure should occur due to the action of the thermostatically controlled make-up valves which assist, along with these small turbines, in heating the drier rolls.

In cases where paper machines are operated by single d. c. motors, or sectional drive, instead of turbines, the speed being maintained by means of electric control devices, in which the draw on the paper is adjusted by varying the voltage of the individual motors driving the different sections, this d. c. power can be obtained from turbine-driven, multi-unit sets, in which the a. c. synchronous machine is normally paralleled with the a. c. mains. The turbine is equipped with an exhaust pressure governor, the steam from this turbine being utilized to heat the drier rolls of the paper machine. This steam is also regulated if necessary, by moisture control devices, in which case it is unnecessary to employ auxiliary moisture control reducing valves, which take their steam from the high pressure main. In this way, the available energy of all the steam used by the drier rolls is utilized, surplus energy being delivered to and any deficiency taken from the a. c. system. In the event of an interruption of power to the a. c. synchronous machine, electrical controls on the turbine will immediately transfer the turbine from pressure control to speed control, and will cause the speed governor which has previously been used for pre-emergency only tc automatically control the turbine speed at the original synchronous speed.

The results obtained from such a device have shown by many tests to have allowed of a transfer from pressure control to speed control so smoothly that the paper machine operators were not aware of the fact that the transfer had been made.

It is, therefore, apparent that a large number of turbine applications have already been made in paper mills and probably more applications can be made in the future. A word of warning, however, that in order to obtain maximum plant economy and smoothness of operation very careful studies of not only the turbine control devices but also all auxiliary valve control equipment must be made in order that complete coordination of control may result.

Finishing, Processing and Converting

Annual Committee Report

During the fall of 1929 this committee was conceived under the title of the Coated Papers Committee. At the annual meeting of the Technical Association in 1930 it acquired its present name. The committee was organized, objects specified and work laid out along new lines. It received its present name and with it, the opportunities and obligation for broader, and at the same time, more intensive work. However, in agreement with the chairman of the operating division, F. C. Clark, it was decided to restrict the work of the committee to the coating field until something definite had been accomplished or at least begun.

In the organization of this committee, an effort was made to have the personnel as representative of the coating field as possible. With the inclusion of a wider range of activities, there is now presented an opportunity to these men who are both interested in specialty lines and are willing to do some constructive work, to identify themselves with this committee. I most earnestly urge all such to talk with me during the convention. The list of those at present on the committee are as follows:

G. R. Alden, Dennison Mfg. Co.
W. E. B. Baker, Stein Hall Co.
A. Bowden, Henry Bosch Co.
O. W. Callighan, Edgar Bros. Co.
A. C. Dreschfield, Paper Makers Chem. Co.
F. W. Egan, J. O. Ross Eng. Co.
W. R. Kidder, Allied Paper Co.
K. T. King, E. I. DuPont de Nemours Co.
J. J. O'Connor, Mead Corporation
H. M. Rafton, Raffold Co. of America
A. L. Sherwood, National Folding Box Co.
M. R. Sentman, J. H. Day Co.
F. W. Schneider, Hampden Paint & Color Co.
B. K. Steadman, Standard Paper Mfg. Co.
N. Clark, Chairman, Standard Paper Mfg. Co.

During the first meeting of the committee at the Convention of 1930 the objects of the committee were outlined and adopted. A brief statement of these are as follows:

1. To work together for the common good toward a solution of vexing problems in the coating field.
2. To attempt, by research, to uncover facts, now dormant, which are pertinent to the industry.
3. To realize these efforts by placing the emphasis on cooperative endeavors.
4. When requested, to provide papers or programs for association conventions.
5. To disseminate to the industry such conclusions as may be drawn from our work.
6. To lay the foundation for scientific development of the industry.
7. To aid in bringing about a spirit of cooperation between the coating mills.
8. By careful work to establish the committee's position, as an authority in the industry, on matters pertaining to scientific and technical procedure in the coating processes.

The committee was divided into five subcommittees each of which was to work on a specific problem. These problems are as follows:

1. Standard specifications for raw stock for various types of coating.
2. Standardization of methods for testing of raw materials.
3. Roll versus brush coating machines.
4. Standard methods for preparation of coating materials.
5. Standard methods for buying, evaluating and storing of pulp or lake colors.

To be helpful to the coating mills, their cooperation had to be enlisted. Consequently a letter was sent to 51 mills stating briefly the formation of the committee and seeking their willingness to work with the various sub-committees. To these letters 32 replies were received—28 being favorably inclined, 3 indifferent and 1 unfavorable. These replies indicated an appreciation, on the part of the mills, of the need in the industry of such a committee and argues for the continuance of this committee on the roster of the association.

Bearing in mind that practically all interchange of ideas must be done by correspondence and the principle fact that to the majority of coating mills this exchange of methods is new and strange, it is not to be wondered at that none of the work on these problems is completed. Each sub-committee has been at work and certain results have been recorded. These and the methods used to arrive at any conclusions will be reported at the symposium of the committee, to which a very cordial invitation is extended to all members and friends who are interested in this work to attend.

During 1931 it is planned to continue work on problems as stated. New problems will be started covering parts of the field now laid out for the committee activities. Just how many and how wide in scope these problems will be will depend very largely on the support of the association membership to the committee in the way of new members.

A Summary of Developments in the Field of Finishing, Processing and Converting Committee During the Year of 1930

According to information at my disposal, there has been no startling achievements in this field during the past year. It is rather impossible to record many of, perhaps, the most notable achievements because of the secrecy with which such improvements are clouded.

There has been important work done in the testing field especially in the field of printing papers. In Germany a method has been evolved for the determination of transparency and at our own Goverment Printing Office, work has been done on the penetration of printing ink. Then too, there has been an effort made for a method to determine the fluff or fuzz on Offset papers. There have been some improvements, although of a minor nature, in machinery principally on coaters, waxers, and friction calenders.

Turning to specialty papers, there have been many methods proposed and patents granted but just how practical they are it is impossible to state. Some of the improvements offered are in the manufacture of the following papers.

1. Impermeable abrasive paper, 2. safety papers, 3. methods for production of special colored papers by means of a spray gun or various arrangements of brushes, rolls, and pans. 4. An enclosed system for calender coloring of paper board, 5. roofing papers, 6. water proof papers and board (cartridge, shells, etc.), 7. grease proof papers, 8. de-inking of printed paper, 9. bottle caps —paper sacks, 10. special photographic papers, 11. paper fabrics of various kinds and 12. paper bottles and other molded receptacles.

TAPPI Literature Relating to Coated Paper

Following is a review of the papers that have been presented at various meetings of the Technical Association and have been published in Technical Association Papers. These are arranged under the classifications—coating materials, sizing, drying and miscellaneous.

American Clays—T. Poole Maynard, Technical Association

Papers II-1919—A plea for the development of American clays and their use in the paper industry. The primary characteristics of clays which should be given consideration are chemical analysis, color, tempering qualities, suspension character, shrinkage, free silica, smoothness of coat, proportions of fine particles, flexibility and toughness, specific gravity and microscopical investigation.

Notes On China Clay—D. V. Lowe, Technical Association Papers VIII-1925—The properties of China Clay considered under the six following headings and the methods for the determination of each suggested: 1. color, 2. moisture, 3. grit, 4. covering power, 5. suspension, and 6. glaze.

Moisture Content of English Coating Clays—D. V. Lowe and R. M. Cobb, Technical Association Papers XII-1929—The moisture content of clays is a function of relative humidity conditions. A study of the moisture content of clay brought into equilibrium with definite degrees of relative humidity and the effects produced by the drying out of the clay.

Method of Testing Clay, Talc and Agalite—D. D. Uong, Technical Association Papers XII-1929—A description of the testing of these pigments given under the following heads—color, detection of artificial coloring, disintegration, grit, adulterants, water formation, iron oxide, fineness, colloidal property and retension.

Domestic Clays for Filling and Coating Paper—O. W. Callighan, Technical Association Papers XIII-1930—The use of domestic clay as a filler and coating material in place of the foreign product. The case is built up by tracing the historical production and consideration of the various factors involved in its use. Such matters as the character of the containers, influence of electrolytes, chemically and mechanically combined water, slaking, plasticity, texture, are considered. A resumé is given of the advantages of the use of domestic processed clay.

Satin White—W. T. Bunce, Technical Association Papers X-1927—Historical notes on the development of satin white. Short notes on the type of paper produced by its use, the precautions to follow in making up the size and the character of the resultant color mix.

The Manufacture of Lake Colors—H. H. Holden, Technical Association Papers VI-1923—Lake colors are defined and the advantages of their use given. Types of manufacturing processes are given with examples taken from red, yellow, blue, green and black colors.

Coloring Matters for Coated Papers—Norman Clark, Technical Association Papers VI-1923—The coloring of coated paper is divided into three sections each dealing with a different form of coloring matter namely—dyes, color lakes and pigments. Notes on the use of each are given and each type of coloring classified with examples under each. A section is included on the handling of coloring matters.

Raw Stock or Paper for Coating—Norman Clark, Technical Association Papers VI-1923—General characteristics which all coating papers should possess under headings of formation, dirt, color, slack-edges, thickness, fuzz, finish, curling and feel. There is included a table of tests for the papers intended for various types of coating. The tests given are ream weight, furnish, bursting strength, sizing and use.

Sizing

Study of the Casein Used in Coating Paper—Clarke Marion, Technical Association Papers IV-1921—Discusses nature of Casein and the five methods of preparation from the raw milk. Also the nature of the resulting product from these various methods. Directions are given for carrying out the following tests on Casein—solubility, strength, moisture, color and odor, acidity, insoluble matters, ash, alkali, starch, viscosity and grease.

Effect of Acetic Acid on Animal Glue—G. W. Sullivan, Technical Association Papers VIII-1925—The advisability of the use of small amounts of acetic acid in glue mixtures intended for use in the manufacture of sealing tape. The effect is discussed, of such addition, on jelly strength, viscosity and quickness of set.

Water Resistance of Mineral Coated Paper—G. K. Hamill, Technical Association Papers X-1927—A continuance of the study of the use of glue as the adhesive in coated papers. The following points are considered: 1. A discussion of the usual tests to determine the quality of coated papers—the thumb test and the sealing wax test. 2. Testing papers for water resistance including a table showing tests on a number of coated sheets. 3. Effects of Formaldehyde on the water resistance of Glue bound coated papers. 4. Viscosity and working life of Glue bound coating mixtures.

Consideration of Glue Bound Coated Paper—G. K. Hamill, Technical Association Papers IX-1926—A report of the continuance of the work undertaken under the research fellowship of the National Association of Glue Manufacturers of the Paper Section of U. S. Bureau of Standards. A description of the experiments conducted with the conclusion that the use of glue as an adhesive introduces no new difficulties into the coating procedure. Trials were made to test the printing qualities of the glue sized papers and in general the results were satisfactory. It is realized that the printing conditions encountered by coating papers vary widely. The article closes with a request for better cooperation between the manufacturers of paper and ink and the printers.

Drying

Drying and Conditioning Gummed Paper—J. O. Ross, Technical Association Papers VII-1924—The classes of driers discussed under two headings, these which hold the paper under tension and these which dry the paper without tension. As illustrative of these two processes, the Crowell and festoon types of driers are described. The factors of time and heat are discussed. The question of the introduction of humidity into the process as a preventive of curling is also discussed. An ideal drying system is described. The writer also discusses the two existing theories of drying gummed paper.

Drying and Conditioning of Coated and Other Papers—J. O. Ross, Technical Association Papers VI-1923—It is pointed out by the writer that the drying and conditioning of coated papers are so inter-related that one process merges into the other. The subject is considered under the following headings—The classes of coated paper, the speeds at which run, the types of driers, system of preheating the air before entrance to the drying lines, a discussion of the drying of double coated paper. In addition, the drying of the following specialties is briefly explained—wall paper, waterproof and glazed paper, gummed paper, sand paper and similar products.

Miscellaneous

Lithographic Paper Problems—Robert F. Reed, Technical Association Papers XII-1929—The lithographic industry requires that practically all types of paper for its use be capable of printing by the offset process. The difficulties encountered by the trade are discussed under four headings: 1. register troubles, 2. greasing or scumming, 3. difficulties related to the securing of satisfactory printing, and 4. problems in the application of adhesives. These difficulties are discussed from the point of view of the causes to which they may be traced; the known means by which they may be controlled and the unknown factors involved.

De-inking and Washing Waste Paper Stock—J. J. O'Connor, Technical Association Papers X-1927—Consideration must be given to the kind and quality of old paper stock to be de-inked if a uniform product is to be obtained. Notes are given on the cooking, screening, washing, bleaching and filtering of the stock. Results of various trials made in the laboratory, where various re-agents were used, are given.

Wax, Sizing Compositions—Joseph Rossman, Technical Association Papers XIII-1930—A description of two compositions used for the waterproofing of paper.

1. Consists of paraffin wax and an ammonium soap of stearic acid.

2. Consists of a mixture of gilsonite, paraffin wax and a mineral oil.

BARYTA PAPER—Th. C. Bentzen, Technical Association Papers VIII-1925—A list is given of the materials used in the manufacture of baryta paper together with the function each plays. The subject matter is divided into three parts:

A. The formulas: The nominal formula for glossy gaslight paper is given.

B. Instructions for the operation: 1. work to be done—acid conditions to be established, 2. temperature of mix, 3. observations when machine is running, 4. regulations of temperature, 5. consequences of winding the paper too wet or too dry, 6. causes irregularities in brush strokes, 7. cause of longitudinal lines, 8. use of water during the running, 9. speed variation and other observations during operation.

C. The testing of baryta paper.

THE GLARIMETER AND THE MEASUREMENT OF THE FINISH OF PAPER—R. E. Loften, Technical Association Papers VIII-1925—A discussion of the effect of the finish of paper upon the character of the light reflected from the surface of the paper and shows how the character of this reflection is related to the finish of the paper. A description of the theory and construction of the Glarimeter, by means of which the finish of paper may be measured, and discusses some results obtained by means of this instrument. A bibliography of literature, pertaining to the determination of gloss, is appended.

PREPARATION AND UTILIZATION OF HAND BRUSH-OUTS IN THE COATING MILL.—Norman Clark, Technical Association Papers IX-1926—A description of the preparation of materials for making brush-outs of glazed, plate and waterproof papers. There is also a concise description of the technic of the brush-out and a plea for their proper utilization.

INCREASING THE SUSPENSION OF THE COATING MIXTURE BY THE ADDITION OF COLLOIDS—B. K. Steadman, Technical Association Papers IX-1926—A description of trials made by additions of tannic acid, gum arabic and sodium silicate.

IMPROVEMENTS IN COATED PAPER MANUFACTURE—Frank W. Egan, Technical Association Papers XII-1929—A historical description of the development of the coating machine leading up to the final product—the Arched Bed machine of which there is a full description given. Passing from the single coating machine, there is an account of the improvements made in Double Coaters, Festooning machines, Winders, Drying and Conditioning Systems.

CONVERTING OF LIGHT WEIGHT PAPERS—L. B. Case, Technical Association Papers XI-1928—An outline of the general processes in vogue for three types of specialty papers. 1. Coating—types of coating and methods of drying mentioned. 2. Printing—a detailed description of the surface and intaglio processes of printing. 3. Embossing—an outline of the method of embossing and a description of the new printing and embossing process. There is added a few remarks as to the future of fancy light weight papers.

RESISTANCE OF PRINTING PAPERS—E. O. Reed, Technical Association Papers XI-1928—The paper represents the work done by the Government Printing Office on the resistance of printing papers to the penetration of printing inks. The tests now in use give reliable information as to the relationship of writing inks to paper. It was with the idea of establishing corresponding tests for printing inks that this work was undertaken.

It was found that this resistance could best be found by a study of the penetration of the vehicles used. These vehicles are divided into three classes: 1. Those which dry by absorption, 2. Those which dry both by absorption and oxidation, and 3. Those which dry by oxidation.

Two methods are developed, the oil flotation method and the oil drop method.

The methods as given are not considered complete for they do not check very well with practical results on the presses. However, it is felt a start has been made in the right direction.

COATED PAPER SECTIONAL MEETING, NEW YORK CITY, FEBRUARY 19, 1930—Technical Association Papers, Series XIII-1930—The meeting of organization called by the chairman of the new committee. The objects of the committee were read and approved. From a list of problems submitted by the members of the committee, five were chosen to be undertaken by the committee. For this purpose, the committee was divided into five sub-committees. After some discussion on the work, R. F. Reed of the Lithographic Technical Foundation gave a short talk on some problems the lithographers meet in the use of coated paper.

NORMAN CLARK, Chairman.

The Iso-Electric Point In Producing Casein*

By R. W. Bell [1]

Casein for paper coating may be classified as a lactic or natural sour, a sulphuric, or a muriatic (hydrochloric) acid type. There are many variations in the technical and mechanical steps of the methods by which each of these types is made. Most of the imported and domestic casein is of the lactic type. Skim milk will curdle at ordinary temperature in about fifteen hours due to fermentation of the milk sugar. In this process the expense of buying an acid to precipitate the casein is eliminated. The problem of vat space for holding the skim milk during the fermentation period is less serious to the small producer than to the large one. There is more manual labor connected with this method than with either of the other two. It may be termed a hand method.

Next in the number of domestic producers, but not necessarily in volume of production, comes the sulphuric type. Coagulation of the casein at approximately 120 deg. F. is accomplished in a short time. The acid is relatively cheap. A hand method is used but it is quite possible that it may be somewhat altered so that labor saving equipment can be employed where large scale production warrants.

The muriatic acid type of casein is made somewhat like the sulphuric. Coagulation takes place at about 95 deg. F. This type of casein is made by a quick method which involves the use of an acid which is more expensive than sulphuric. The method may be easily adapted to the use of labor saving equipment. It cannot be said that one type may be manufactured at less expense than the others since the relative costs depend largely on such factors as equipment and volume of production. The purpose of this paper is to point out certain technical, rather than mechanical, factors involved in the production of these three types of acid casein.

The properties which casein, for use in paper coating, should possess are known only in a general way. These properties cannot be definitely established without a great deal of reliable research work. We may, however, assume with some degree of confidence that the casein should be low in ash and free acid,

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.
Contribution of the Finishing, Processing and Converting Committee.

[1] Research laboratories, Bureau of Dairy Industry, U. S. Dept. of Agriculture, Washington, D. C.

should dissolve easily and should have a high adhesive strength and good flowing properties.

The most important factor in the production of casein which will possess these properties is the application to commercial practice of the fact that its iso-electric point or range is at a hydrogen-ion concentration in terms of pH of approximately 4.6. The minimum solubility occurs at this point and also this is the reaction at which theoretically the maximum precipitation of casein as casein occurs, uncontaminated with its compounds except so far as these are carried down by occlusion and adsorption.

The symbol pH is merely a convenient means of expressing hydrogen-ion concentration. It is an index to acid intensity. Titratable acidity when expressed in terms of per cent is a measure of quantity of acid. Tenth normal hydrochloric acid has a greater hydrogen-ion concentration (pH 1.07) than tenth normal lactic acid (pH 2.43). All substances which have a pH value of 0.0 to 7.0 are acid; those which have a pH value of 7.0 to 14.0 are alkaline. Therefore, the smaller the pH value the greater the acidity. The hydrogen-ion concentration in terms of pH of whey and of casein may be determined easily and quickly by application of the methods described by Watson.[2]

It so happens, at least in the hydrochloric and sulphuric methods, that at or near pH 4.1 the casein curd takes on a resiliency and texture which is valuable for commercial washing and handling. Under commercial conditions of manufacture the time factor is important. Complete equilibrium between acid and milk constituents is not attained within the ordinary time of operation when the casein is precipitated by the addition of an acid. This is shown by the revision of the reaction of whey toward higher (less acid) pH values as curd and whey are left in contact. Therefore, the tendency will be toward more rapid elimination of the compounds combined with the casein on acidification by addition of the mineral acid to such point as that which experience shows is favorable to resiliency and texture, namely, at or near pH 4.1. In the case of muriatic and sulphuric acid casein whey this point is approximately 0.50 per cent acid calculated as lactic acid with phenolphthalein as the indicator.

The casein curd is washed after the whey has been removed. During this washing acid and salts are removed. If the curd is in good condition for washing and if the washing is effective it will be found in most cases that the washed casein has a pH of approximately 4.6, a low ash content, and a low free acid value.

There are a number of factors to be considered when making up a coating preparation. An important one is the reaction of the finished material. It is desirable to hold the alkalinity within certain limits, especially when satin white is the mineral constituent. The alkalinity largely determines the viscosity. Clay, an inert material chemically, is used more than any other mineral. It is probably true that, regardless of the mineral constituent, the properties of the casein have more to do with the amount of solvent required to give a coating preparation of the desired reaction than any other factor. The effect of the pH of the casein on the amount of alkali required in 100 cc. of a 9.0 per cent solution having a pH of 9.16 is illustrated in Fig. 1, which is based on data in Table 1 in an article by Bell and Gould.[3]

TABLE 1
PROPERTIES OF SOME ACID CASEINS

Sample No.	Water, per cent	Ash, per cent	Fat, per cent	Free acid, cc. N/10 NaOH	Casein, pH	Alkali to dissolve to pH 9.16±.02 cc. N/1 NaOH	Strength	Remarks
1	5.91	1.93	0.27	1.0	4.74	8.0	7	Coating mixture and solubility excellent.
2	7.22	2.68	0.00	5.6	4.60	8.5	7	Coating mixture and solubility good.
3	7.86	3.89	0.18	6.4	5.00	7.0	9	Coating mixture lumpy. Solution thick.
4	8.03	3.76	0.18	6.2	5.03	7.0	11	Coating mixture slightly lumpy. Solution thick.
5	8.35	3.90	2.70	5.0	5.20	6.0	9	Coating mixture slightly lumpy. Slowly soluble.
6	7.48	5.11	0.45	7.8	5.14	6.2	12	Coating mixture and solution thick.
7	6.23	3.63	0.18	13.0	4.32	10.2	11	Coating mixture smooth. Solubility fair.
8	6.58	3.05	1.08	14.2	4.25	10.5	12	Coating mixture thick. Slowly soluble.
9	6.30	3.39	0.09	15.2	4.35	9.6	11	Coating mixture and solubility poor.
10	6.49	4.34	0.00	16.2	4.46	10.2	12	Coating mixture poor. Very insoluble.

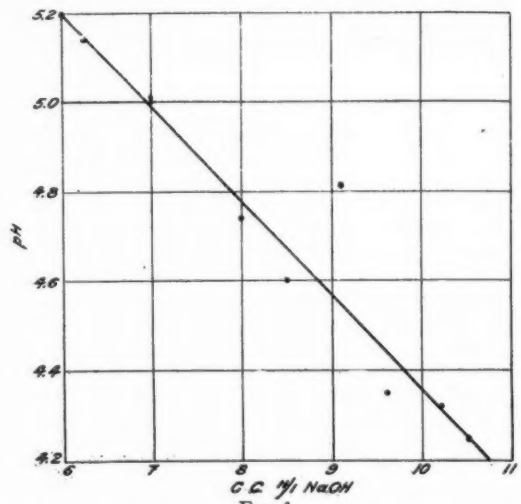

FIG. 1

Effect of pH of casein on amount of alkali required in 100 cc. of a 9.0 per cent solution having a pH of 9.16.

It will be seen from these data that the free acid in the casein[4] had a much smaller effect on the amount of alkali required to make up the solutions to a pH of 9.16 than did the pH of the casein. This is obvious from the fact that, when the pH of the casein is plotted against the cc. of alkali required in the solutions, the points lie practically in a straight line.

If a commercial casein has a pH of 4.6, then the alkali required to bring a solution of it, such as is described, to pH 9.16 would be 8.7 cc.; it would take 6.0 cc. for a casein having a pH of 5.2 and 10.5 cc. for a casein having a pH of 4.2. If 8.7 cc. had been taken as the standard amount of alkali required to dissolve each one of the three caseins and bring its solution to the uniform pH, the amount would have been too low by 1.8 cc. in one case and too high by 2.7 cc. in another or in terms of per cent—17.1 and 25.7, respectively. The same principle regarding the effect of the pH of the casein on the amount of alkali required to bring its solution to a pH in the alkaline range may be applied regardless of the solvent used or the final reaction of the solution.

An excess of alkali is usually employed in making up the coating preparation so as to be sure to have enough to dissolve the casein and attain sufficient alkalinity to insure a free flowing coating mixture. The expense of paying for this extra alkali, the troubles encountered due to a too alkaline reaction and the formation of salts in the coating preparation may, therefore, be largely eliminated by the use of a uniform and high-grade casein. This casein, be it lactic, sulphuric, or muriatic, should have a pH of approximately 4.6 and a low free acid value. Such a casein will, if other factors are properly controlled, be low in ash, dissolve easily, have high adhesive strength and good flowing properties.

[2] Watson, P. D., Ind. Eng. Chem. 19, 1272. (1927.)
[3] Bell, R. W., and Gould, S. P. (Unpublished data.)
[4] The figures given for free acid are empirical. They represent the cc. of N/10 NaOH required to neutralize the acid in 50 cc. of liquid obtained by soaking 10 grams of casein in 100 cc. of water for one hour with occasional stirring.

Current Paper Trade Literature

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts and Bibliography of the Technical Association of the Pulp and Paper Industry

Clarence J. West, Chairman

For photostatic copies of articles appearing in the Abstract Section, address the chairman of the Abstracts Committee, Dr. Clarence J. West, National Research Council, 21st and B. Streets, Washington, D. C. The charge for this service is: Photostats 9 x 11 inches, 18 cents each; 18 x 11 inches, 35 cents each; 22 x 18 inches, 70 cents each; minimum charge, 50 cents. Payment should be made upon receipt of invoice. Copies of United States patents may be obtained from the U. S. Patent Office, Washington, D. C., for 10 cents each. Send currency not stamps.

Multi-Ply Floor Covering. Ralph G. Jackson. U. S. pat. 1,765,581, (June 24, 1930).—An asphalt-saturated felt base is used with an overlying colored fabric with an intervening binder such as a proxylin or other waterproof composition.—A.P.-C.

Waterproof Paper. Albert L. Clapp assignor to The Flintoke Co. U. S. pats. 1,771,744 and 1,771,745, (July 29, 1930).—*No. 1,771,744.*—A material is prepared by incorporating an aqueous sodium silicate-asphalt dispersion into paper making stock adding an agent such as alum or aluminum sulphate capable of reacting with the sodium silicate to precipitate the asphalt in unaltered state and form an insoluble silicate, drying and then heating above the melting-point of the asphalt particles to affect their coalescence and fusion. *No. 1,771,745* describes a process of mfg. of water-resistant paper or paperboard in which an aqueous soap-size-asphalt dispersion is disseminated through paper pulp followed by drying, and heating to effect coalecence of the asphalt particles.—A.P.-C.

Vegetable Parchment. Anon. Paper Making Special No. 43-55 (1930).—A brief outline of the mfg. of vegetable parchment as carried out at the British Vegetable Parchment Mills, of its properties and uses.—A.P.-C.

Effect of the Hygrometric State of the Atmosphere on the Production of Sensitized Photographic Paper. Papetrie 52, 710-714 (June 25), 914-921 (Aug. 10, 1930).—A brief discussion of the effects of excessive humidity or dryness of the atmosphere on the drying of sensitized paper, with a description of the uses to which can be put Elka gelatino-bromide paper, particularly in etching in typography and rotogravure.—A.P.-C.

Blotting Paper. G. H. Wilkinson. Eng. pat. 330,756.—Blotting paper has one surface smoothed or polished to enable calendars, advertisements, etc., to be printed thereon. The polishing may be effected by a glazing or other machine. The blotting paper may be passed around a large polished drying cylinder against which it is pressed by felt pads.—A.P.-C.

Hand-Made Paper.. Anon. Paper Making Special No. 17-31 (1930).—A brief outline of the history of hand-made paper in England, with a description of its mfg.—A.P.-C.

Substitute for Hard Paper, Ebonite, Fiber, Etc. Hans Friedlander and Arthur Janser (Janser assignor to Friedlander). U. S. pat. 1,766,817, (June 24, 1930).—Felted fibrous material is impregnated with montan wax heated to above 200°C.—A.P.-C.

Safety Paper. F. B. Dehn from Snyder Document Protection Co. Eng. pat.—The body comprises a body portion of uncalendered paper, sufficiently bibulous to permit ink quickly to diffuse therethrough, and an opaque coating sufficiently weak in texture to be rupturable throughout its thickness by a writing implement. In use, the ink passes through the coating and spreads in the body of the paper, thus making impossible the removal of the ink from the paper. Casein is stated to be suitable coating material.—A.P.-C.

Waterproof Paper. I. G. Farbenindustrie Aktiengesellscraft. Fr. pat. 35,906, (Sept. 20, 1928); addition to 648,156.—Insoluble simple or mixed esters or ethers of cellulose derived from saturated or unsaturated or substituted higher fatty acids are added to paper pulp; the pulp is worked up in the usual manner and the finished band of paper is subjected to a mechanical pressure at a raised temperature below the flowing point of the cellulose derivatives.—A.P.-C.

Paper Produce Containing Synthetic Resin. Emil E. Novotny asignor to John S. Stokes. U. S. pat. 1,771,138, (July 22, 1930).—A resinous reaction product formed entirely from xylenol and formaldehyde is used for impregnating paper or cloth for electric insulation, etc.—A.P.-C.

Transparent Paper. William M. Driesen assignor to S. D. Warren Co. Can pat. 302,863, (Aug. 5, 1930).—A paper web made up of substantially exclusively of partially hydrated sulphite pulp is impregnated with a solution of nitro-cellulose, denatured alcohol, ethyl acetate, butyl acetate ethyl lactate and diamyl Phthalate.—A.P.-C.

Safety Paper Containing Esculin. David J. Block. U. S. pat. 1,771,612, (July 29, 1930).—A paper containing esculin, reveals alterations when examined under ultra-violet light.—A.P.-C.

Box Toe Material. Albert L. Clapp assignor to Beckwick Mfg. Co. U. S. pat. 1,765,861, (June 24, 1930).—A dense, hard and resilient box toe comprises a layer of felted fibers such as mixed long and short fibers and a thermoplastic material such as rosin, gilsonite and montan wax precipitated on and adherent to the fibers and in excess by weight over the weight of the fibers.—A.P.-C.

Insulating Paper. Reed P. Rose and Harold E. Cude assignors to General Rubber Co. U. S. pat. 1,765,774, (June 24, 1930).—In preparing an insulation suitable for winding on electric conductors, paper pulp is hydrated to a gelatinous condition, mixed with a normally hydrated pulp and with dispersed rubber, and the mixture is formed into sheets.—A.P.-C.

Impregnated Paper. Bakelite Corp. Fr. pat. 664,869, (Nov. 30, 1928).—Paper is impregnated with a solution consisting of a potentially reactive phenolic resin, capable of liberating free ammonia gas during transformation to the infusible state and furfurol. The use of furfurol prevents formation of bubbles by the liberated ammonia.—A.P.-C.

Composite Wrapping Material of Paper and Metal Foil. Wilford J. Hawkins, assignor to American Mach. & Fdry. Co. U. S. pat. 1,760,645, (May 27, 1930).—Paper is faced with a foil of lead containing 0.25 to 0.50 per cent magnesium (which serves to increase the malleability) and rolled to a thinness of approximately 0.0005 inch.—A.P.-C.

Sheets of Paper Making Fiber and Rubber. Reed P. Rose and Harold E. Cude, assignors to General Rubber Co. U. S. pat. 1,773,201, (Aug. 19,1930).—A protective colloid, such as acetylated starch, and a rubber dispersion are successively incorporated in the stock after beating, the rubber is precipitated from the dispersion upon the fiber and the treated fiber is formed into sheets.—A.P.-C.

Mfr. of Reinforced Paper. William H. Millspaugh assignor to The Paper and Textile Mchy. Co. U. S. pat. 1,748,360, (Feb.

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25, 1930).—Wire netting, poultry wire, cheese cloth, burlap, etc., is interposed between the plies formed on two or more vacuum, sheet-forming rolls of the new Millspaugh machine, the reinforcing materials being led in at the point at which the plies are brought together.—A.P.-C.

Method for Making Colored Crepe Paper With Insoluble Dyes. Gardner R. Alden assignor to Dennison Mfg. Co. U. S. pat. 1,756,778, (April 29, 1930).—Instead of treating the paper with the dye solution and with the fixing agent and then creping, it may be treated with the dye solution, creped, and finally treated with the fixing agent, or it may be treated first with the fixing solution, then creped, and finally treated with the dye solution. In order to prevent excessive destruction of the creping during the second wet treatment, the latter should be carried out with organic liquid (e. g., a solution of the dye or of the fixing agent in alcohol, carbon tetrachloride or benzene) or with a strong solution of a neutral salt such as ammonium sulphate, sodium chloride, etc.—A.P.-C.

Process of Making Fiber-Filled Woven Product. Charles H. Crowell. U. S. pat. 1,758,502, (May 13, 1930).—One side of a paper web is coated with adhesive, a cloth web is united to it, the composite web is partly dried, adhesive is applied to the second side of the paper, a second cloth web is united to the paper, the composite web is again partly dried so as to leave it in a moist condition, and the paper is finally split by drawing the two cloth webs apart, a portion of the paper adhering to each cloth web.

Paper Creping Machine. Samuel J. Campbell assignor to one-half to Hudson-Sharp Mach. Co. U. S. pat. 1,762,157, (June 10, 1930).—Provision is made for the adjustment of the creping plate with relation to the feed rolls, so that its angle with respect to the roll surfaces and the width of the channels may be varied to adapt the machine to the creping of paper of varying thicknesses and quality and also to vary the character of the creping imparted to the paper. Provision is also made for its utilization in the creping operation of yieldable plates or strips so arranged as to yield locally to accommodate variations in the thickness of the paper web and to maintain the paper amount of compression under varying conditions.—A.P.-C.

Creping Machine. Samuel J. Campbell. U. S. pat. 1,764,676, (June 17, 1930).—A strip of paper is pushed through a narrow passage between two opposing walls which are sufficiently separated to allow the paper to fold upon itself in a series of crinkles, and sufficiently close that the friction will hold the material back and cause it to crinkle. By initially causing the walls to converge toward the point of delivery, the crinkling operation can be started, after which the walls may be allowed to assume a parallel position, the friction of the material on the walls being then sufficient to allow the operation to continue. By varying the character or proximity of portions of the wall surfaces and by alternating moving surfaces with stationary surfaces along lines parallel to the plane in which the material travels, longitudinal strips may be produced in the finished production due to the fact that the material in one zone or strip has been differently crinkled from that in another. Superposed or continuous strips of paper of differing widths or marginal contours and of contrasting colors may be fed between the walls in such a manner as to simultaneously crinkle the strips and interfold them, so that the product will have the appearance of a single strip of creped paper, but with the contours, designs and colors of one strip imposed on the other strip on one of its faces, the wider strip serving as a background for the designs and colors and the narrower.—A.P.-C.

Wire Guard. Edmund Burke assignor to Brown Co. U. S. pat. 1,765,823, (June 24, 1930).—Fibrous tubing, made by winding paper with a suitable adhesive, or by winding a sheet of wet pulp on a mandrel under pressure, drying, and impregnating with a waterproofing substance such as pitch, asphalt, etc., is used as a guard for transmission lines at points which may come into contact with trees, etc., for the bottom of guy wires to render the latter more conspicuous.—A. P.-C.

Waterproofing Paper Tubes for Shot Gun Cases or Cartridges. F. E. Griffiths. J. S. Shufflebotham and Imperial Chemical Industries, Ltd. Eng. pat. 327,429, (Dec. 28, 1928).—The paper tubes are coated with a mixture of cellulose esters or ethers, or mixed esters and ethers, resin and drying oil.—A.P.-C.

Fiber Products Such As Conduits for Electric Conductors, Etc. Daniel M. Sutherland, Jr. U. S. pat. 1,772,968, (Aug. 12, 1930).—Products such as conduits or laminated sheets are formed of dried paper sheets each containing at least 60 per cent of a waterproofing binder such as asphalt which has a melting-point at least as high as about 120°C., the sheets being coated with a binder of relatively low melting point and superimposed one on another, shaped, compacted under heat and pressure and cooled under pressure.—A.P.-C.

Mfr. of Paper Tubes for Shot Shells. Watson H. Woodford assignor to Remington Arms Co. U. S. pat. 1,767,827, (June 24, 1930).—The shell is treated with petrolatum for the purpose of controlling the charring of the shell under the heat of firing.—A.P.-C.

Causes of Failures in Shipping Containers. C. A. Plaskett. Forest Products Lab., Madison, Wis. Paper Trade J. 90, No. 25, 62-63 (June 19, 1930); Tech. Assn. Papers Series 13, No. 1, 223-224 (May, 1930).—A discussion of the nature of the data which it would be necessary to collect in order to ascertain the exact causes of failure in shipping containers and the most satisfactory methods of overcoming them.—A.P.-C.

Paper Containers for Milk. Anon. Pulp Paper Mag. Can. 29, 540 (April 17, 1930).—A brief description of the process at present in use in England and in continental Europe for the manufacture of paper containers for milk, with a brief outline of their advantages over glass containers.—A.P.-C.

Some Problems in Converting Board to Cartons. H. L. Rammer. Fiberboard Products, Inc., Stockton, Cal. Paper Trade J. 91, No. 4, 45 (July 24, 1930); Tech. Ass'n. Papers Series 13, No. 1, 265 (May, 1930).—A brief discussion of the problems confronting the carton manufacturer which are due to the usual defects in the board itself.—A.P.-C.

Process for the Production of Vulcanized Fiber. Robert R. Fulton assignor to The Koppers Co. U. S. pat. 1,767,662, (June 24, 1930).—Material such as paper from cotton rags or wood pulp is treated with a solution of calcium thiocyanate and formaldehyde at substantially atmospheric temperatures.—A.P.-C.

Vulcanized Fiber Mfr. Problems. F. L. Simons. Rogers Fibre Co., Kennebunk, Me. Paper Trade J. 90, No. 25, 60-61 (June 19, 1930); Tech. Assn. Papers Series 13, No. 1, 228-229 (May, 1930).—A discussion of the requirements of paper for the manufacture of vulcanized fiber, dealing with the structure of the sheet and the character of the individual fibers, and bringing out the difficulties of determining before hand the suitability of a given sample for the production of vulcanized fiber.—A.P.-C.

Ten Years of Research on Cellulose Sausage Casings. William F. Henderson. Visking Corp., Chicago. Cellulose 1, 152-156 (July), 179-183 (Aug. 1930).—A description of the investigations carried out which resulted in the production of a commercially successful, seamless, viscose sausage casing.—A.P.-C.

Mfr. of Vulcanized Fiber. A. F. Jacobs. Eng. pat. 330,394, (May 30, 1929).—Sheets of cotton cellulose in the form of absorbent paper are treated with a solution of zinc chloride and pressed together between heated rollers; after washing out the zinc chloride, the wet material is immersed in a bath of soluble oil ("hydraulic oil"—An emulsifiable product containing sul-

phonated oil) and water, and is subsequently dried and pressed between heated platens and rollers.—A.P.-C.

Fibrous Composition for Making Molded Articles. S. F. McCord and Dorcam Maché Co. Ltd. Eng. pat. 313,112, (March 7, 1928).—Waste paper is ground into a dry wooly form and mixed with starch and water and may also be mixed with a filler such as whiting; the product may be subjected to hot molding under pressure.—A.P.-C.

Papiermache. D. C. M. G. P. Papetereie 51 52, 526,529 (May 10, 1930).—A number of formulas are given.—A.P.-C.

Fibrous Composition for Making Molded Artifices. Allgemeine Elektrizitäts-Gesellschaft assignor to International Electric Co. Eng. pat. 312,178, (May 21, 1928).—Billiard balls, umbrella handles and other articles are made by saturating fibrous material such as woven fibers or paper strips with a binder such as phenolaldehyde synthetic resin, compressing, and heating. Waste material from the mfr. of fibrous gear wheels may be thus utilized.—A.P.-C.

Conditioning of Paper. Anon. World's Paper Trade Rev. 94, 1178 (Oct. 3, 1930).—A brief illustrated description of the Camco (Machinery), Ltd., paper sheet conditioner for printing plants, with an outline of its merits.—A.P.-C.

Humidity In the Press Room. John Taylor, Queen's Press, Manchester. World's Paper Trade Rev. 93, 1434-1440, 1450, 1452 (April 18, 1930).—A discussion of the effects of variations in the relative humidity of the press room atmospheres and of the importance of controlling humidity conditions.—A.P.-C.

Physical and Microscopical Study of Letterpress Printing. James Strachan. Paper Maker & Brit. Paper Trade J. International No., 74-76 (1930).—A discussion of the influence of type surface, paper surface and pressure applied on the results obtained in printing.—A.P.-C.

Sheet-Drying Process and Apparatus. Jasper B. Willsea asignor to Willsea Works. U. S. Pat. 1,768,498, (June 24, 1930). —In the seasoning and drying of paper by suspending bundles of sheets by means of clamps and blowing heated air between them, the portion held in the clamps does not dry out as readily as the free portion of the sheets.—This is overcome by placing a heating element, *e.g.*, steam coils, above and close to the clamps.—A.P.-C.

Paper Cutting Machine. William L. Valiquette assignor to The Harris-Seybold-Potter Co. U. S. pat. 1,766,855, (June 24, 1930).—The invention covers various features in the construction of book trimming machines in which a single knife is used for trimming the sides and ends of books and pamphlets and for splitting the package into several parts. The clamp for the paper pile is actuated by spring tension which is automatically varied for the various packages, the spring being compressed by an eccentric actuated by the main driving mechanism, and means are provided to serve as a safety stop to prevent any overthrow of the parts. The clutch devices for coupling the operating mechanism to the constantly running fly wheel is constructed so as to be operated simultaneously with the release of the brake and means are provided for automatically disconnecting the clutch at the end of each cut. Provision is also made for the quick and ready attachment of the knife to the knife bar so that it can be readily and easily removed and replaced. Stops are provided for in conjunction with the back and side gauges so that the portion of the package for the front, the tail and the head cuts may be obtained by the location of the stops, and for each cut the package may be quickly and accurately moved into the desired position for the particular trim desired, the spots being so designed and arranged that they do not interfere with one another.—A.P.-C.

Machinery

Pulping Machine. George S. Witham, Jr. U. S. pat. 1,759,385, (May 20, 1930).—The machine consists of a large, cylindrical, horizontal, unperforated drum (say 10 feet in diameter by 30 feet long), the interior surface of which is provided with inwardly projecting elements such as angle irons. The inlet consists of a large hollow trunnion of sufficient dimensions to permit of introducing bales of pulp or waste papers, etc. The opposite end of the drum is closed by a head, perforated with holes of the size of the maximum dimensions desired of the pulped material, the holes being arranged in circles in such a manner as to leave a given minimum depth of water (say 12 inches) in the bottom of the drum. Alternatively, the discharge end may be provided with a large hollow trunnion, of such dimensions as to leave the desired minimum depth of water in the bottom of the drum and closed with a screen of suitable mesh to permit the material to pass through when it has been reduced to the desired size. Disintegration may be accelerated by introducing hard materials such as stones, hardwood blocks or rubber-covered metal masses in the drum.—A.P.-C.

Measuring the Wood Pile. W. A. Parker. Pulp Paper Mag. Can. 30, 393-394 (Oct. 2, 1930).—A method is described which has been used successfully for measuring vertical-faced wood-piles and irregular cone-shaped pikes. It was found by experience that for the wood inside a vertical-faced pile very good results were obtained by basing the calculation on 175 cubic feet per cord.—A.P.-C.

Preparation of Bamboo for Pulping. J. L. Jardine and I. T. Nelson. Eng. pat. 323,611.—Bamboo and like stems are disintegrated for pulp manufacture by being passed through pairs of rolls which are grooved circumferencially to split the stems along their length, and pairs grooved longitudinally to bend them at right angles thereto.—A.P.-C.

Slab De-Barking Machine. William A. Davidson. U. S. pat. 1,759,188, (May 20, 1930).—The machine is intended for removing bark from slabs of the heavy western timbers, which is often of greatly varying thickness. The slab is placed on feed rolls which make it pass under two parallel, continuous, chain cutters, the first one cutting down through the bark to the wood, while the second cuts away the bark from the wood. The position of the chains is easily adjusted for each slab so as to conform with the shape of the latter.—A.P.-C.

Paper Stock and Centrifugals. Walter L. Glass. Tolhurst Machine Works, Inc., Troy, N. Y. Paper Mill 53, No. 25, 16, 30 (June 21, 1930).—A brief discussion of the chief variables to be considered before installing centrifugals for the treatment of paper machine stock, which are, type of fiber, freeness, hydration, maximum production per hour, average consistency to wire, floor space and head space available on machine floor next to the screens. method of handling white water, amount of filler in sheet.—A.P.-C.

Vacuum Forming Automatic Paper Machine. W. H. Millspaugh. Paper Trade J. 91, No. 6, 71-72 (Aug. 7, 1930); Tech. Assn. Papers Series 13, No. 1, 283-284 (May, 1930).—A brief description of the new Millspaugh paper machine, drawing attention to similarities with and differences from cylinder and fourdrinier machines.—A.P.-C.

Paper Break Indicator and Recorder. Anon. Paper Trade J. 91, No. 17, 45 (Oct. 23, 1930).—The light relay paper break recorder includes a light source on one side of the sheet. a light relay on the other side of the sheet, and a type-U graphic meter the chart of which can be renewed daily; with these can be used a gong, red light, or other device to call the operator's attention. The light relay consists of a photo-electric cell, grid glow tube, relay, transformer and necessary auxiliary equipment. The operation, merits and possible applications of the instrument are briefly outlined.—A.P.-C.

Vat for Paper Making Machines. William H. Millspaugh assignor to The Paper & Textile Machy Co. P. S. pat. 1,753,800, (April 8, 1930).—The patent covers various points of the construction of the vat for feeding the stock to the vacuum forming-cylinder of the new Millspaugh machine. The box or vat

is substantially L-shaped in vertical cross section and is so positioned, relatively to the roll, that the upper surface of the horizontal branch is practically in the same horizontal plane as the axis of the forming-roll. The cross section of this branch is considerably smaller than that of the vertical branch of the L. The bottom of the stock chamber in which the pulp is in contact with forming-roll is practically in the same horizontal plane as the axis of the roll, the stock being delivered upwardly to this chamber through an opening which is smaller in cross-section than the horizontal branch of the L. All comers are carefully rounded so as not to interfere with the flow of the pulp and so as to eliminate dead spaces. In the stock chamber is an agitator consisting of a longitudinal rod which is vibrated back and forth, and on which are mounted a series of substantially rectangular plates; the edge of each plate which is nearest the roll is curved so as to follow the curvature of the roll, though remaining out of contact with it. The back of the stock chamber is formed of a vertical wall, at the top of which is mounted an inclined overflow plate, the angular position of which may be varied, thereby varying its distance from the forming cylinder. The end walls of the vat are curved along an arc substantially concentric with the roll, but at some distance from it. The space between the end walls and the roll is closed by a rubber deckle strip, which can be adjustably clamped to the wall by means of suitable deckle holders. The rubber deckle is adjusted to lie very close to, but not quite in actual contact with, the roll, the vacuum created in the roll enabling atmospheric pressure on the outside of the end walls to prevent the stock from leaking out.—A.P.-C.

Control Mechanism for Paper Making Machines. Darcy E. Lewellen. U. S. pats. 1,757,867, (May 6, 1930), 1,768,088 and 1,768,225 (June 24, 1930.)—*No. 1,768,028—This is an improvement* on Brown's U. S. pat. 1,157,204 of Oct. 19, 1915, according to which a thickness gaging device is used to set in motion a motor which regulates the position of the pulp supply gate. The present invention seeks to overcome the defects inherent in such a control device by providing impulses to the motor which will cause it to operate only for a predetermined time. If the amount of stock supplied during that period is still insufficient (or excessive), the motor will be given another operative impulse, and so on till the supply gate has been moved to the right position to supply stock which will make paper of the desired thickness. *No. 1,757,867*—According to this invention, the control mechanism is similar to that just mentioned, but is arranged to respond to variations in weight of the paper, so that the weight of the sheet is maintained constant. *No. 1,768,325* provides a thickness gage which controls the speed of the paper machine, so that the latter is automatically regulated to maintain the thickness of the web constant. The speed of the engine is varied by varying the relative speed of the main drive wheel and a governor which controls the speed of the engine, which is accomplished by using a Lewellen variable-speed transmission for driving the centrifugal governor of the engine. A control device sensitive to variations in the thickness of the paper causes operation of a motor which is geared to the shifting screw of the variable-speed transmission to drive it in the proper direction to change the speed ratio between the engine governor and the engine crank shaft, to bring about the desired change of speed in the engine.—A.P.-C.

Paper Making Machine. William H. Millspaugh assignor to The Paper & Textile Machy Co. U. S. pat. 1,758,167, (May 13, 1930).—This patent provides for a slight obliquity of the end walls of the stock chamber in which the pulp is in contact with the forming-cylinder of the new Millspaugh vacuum paper machine. This obliquity is very small; for example, with end walls 15 inches high, an inclination of each wall of 1/16 of an inch to the vertical, producing a total divergence of ⅛ of an inch, is found sufficient. The purpose and advantage of this arrangements is to relieve the edges of the sheet from frictional engagement with the side walls, or to reduce such frictional engagement to a minimum.—A.P.-C.

Paper Machine. L. M. Yoerg and R. W. Pattison. Paper Mill 53, No. 37, 26-30 (Sept. 13, 1930).—A brief discussion of the basic function of each part of the paper machine.—A.P.-C.

Fourdrinier Machines. S. Milne. Belg. pat. 367,422, (March 31, 1930).—The portion of the table which is shaken is supported on vertical leaf-springs, having a natural vibration period equal to or greater than the maximum vibration period required for shaking the table. Each journal of the breast roll carries a plate which rotates in a box in which it is adjusted and to which oil is fed to absorb the shocks resulting from the changes in direction of the vibrations.—A.P.-C.

Fourdrinier Paper Machines. P. Erkens. Eng. pat. 325,133.—Pulp is deposited successively from separate auxiliary wires on to a main wire, the production of a multiple web paper or cardboard taking place gradually between the breast roll and suction boxes of the main wire. Pulp may also be fed to the main wire from a flow box as usual. Preferably the auxilliary wires and the main wire all have the same parallel shake; alternatively, shake may be applied only to the auxiliary or only to the main wires, or there may be no shake applied to any of the wires. Suction devices assist in couching off from the auxiliary units, each of which is provided with a suction box.—A.P.-C.

Suction Box for Paper Machines. Ernest Kramer. Fr. pat. 682,030, (Sept. 19, 1929).—The invention relates to the type of suction boxes in which the top consists of rolls which turn as the wire travels over them. It is characterized by the fact that the outer rolls are of larger diameter than the inner ones and project beyond the sides of the suction box, and that the inner rolls are mounted on a removable frame which is closed relatively to the suction box.—A.P.-C.

Improvement to Paper Machines in Which the Sheet is Transferred Automatically from the Wire to the Presses by Means of a Felt. Papeteries Navarre. Fr. pat. 678,152, (Oct. 31, 1928).—The ordinary roll bringing the carrying felt in contact with the wire is replaced by a suction roll, mounted so that the pressure with which it rests on the wire can be accurately regulated.—A.P.-C.

Suction Roll, R. J. Marx. Eng. pat. 322,982.—The sides of the opening of the suction box are thickened throughout their length to provide an increased bearing surface, so as to reduce wear against the shell of the roll and to avoid undue air leakage. Rubber strips may be secured beneath the lips of the suction box to contact with the shell.—A.P.-C.

Cellular Suction Rolls for Dewatering Fibrous Materials, Especially Cellulose. Gerhard Schmidt. Paper Maker and Brit. Paper Trade J. 80,363,365 (Oct. 1, 1930).—A description of the Boltersdorf-Seybold type of the suction-cell rolls constructed by F. H. Banning & Seybold Maschinenbaugesellschaft m.b.H., Düren (Rhineland).—A.P.-C.

System of Presses for Paper Machines. J. M. Voith & Co. Fr. pat. 675,642, (May 23, 1929).—In order to obtain the same finish on both sides of the paper, instead of reversing the direction of the paper at the last press, the press itself is reversed, that is, the soft rubber-covered roll is made the upper roll, while the hard roll is the lower roll.—A.P.-C.

Method of and Mechanism for Watermarking and Cutting Paper. Vaughan N. Magill. U. S. pat. 1,757,204, (May 6, 1930).—In addition to the watermarking devices, the dandy roll is provided with one or more perforating plugs, which make holes in the web at predetermined points relatively to the watermarks. When the sheet, after drying, reaches the cutter, it passes between two branches of a compressed air pipe which

delivers air to actuate the clutch of the cutter. When a hole in the web passes between the two branches of the pipe, the compressed air passes through the second branch and actuates the clutch, so that the paper is cut at the desired point relatively to the watermarks. An electrical device may be used instead of the compressed air pipe by closing a contact whenever a hole in the sheet passes by a predetermined point.—A.P.-C.

Suction Table Roll. Hiland R. Farnsworth assignor to The Paper and Textile Machy Co. U. S. pat. 1,754,822, (April 15, 1930).—The invention provides suction rolls of relatively small diameter (somewhat larger than the ordinary table rolls, but considerably smaller than the couch roll), one or more of which are substituted for a corresponding number of the flat suction boxes. The roll consists of a stationary tube closed at one end and connected at the other end to a suction pump. About the stationary tube is mounted a rotating suction roll shell which is kept centered on the inner tube my means of longitudinal spacing blocks and a spacing strip. The latter is mounted along the top generator of the inner tube and is provided with a longitudinal slot communicating with the inside of the tube. The spacing blocks and strips are preferably made of libnum vitae, and the water which passes through the performations of the outer shell acts as lubricant. With these rolls, a much higher vacuum can be used than with the ordinary flat suction boxes, and the wear on the wire is practically negligible.—A.P.-C.

Fourdrinier Paper Making Machine. Walter H. Delahaye. U. S. pat. 1,743,808, (Jan. 14, 1930).—The object of the invention is to provide a construction permitting of putting the wire in place without dismantling and without running the table section to one side. The couch roll is mounted on bearings independent of the table frame. The frame is supported on a sub-frame; on the front side it does not rest directly on the sub-frame, but is supported thereon by means of removable block placed in an opening in the sub-frame. Along this opening are placed pairs of rolls, one over another, but not in contact with one another. The upper set of rolls are mounted on a common shaft which can be suitably driven by a motor, etc.; and the lower set of rolls are similarly mounted on a second shaft. After taking out the old wire, the guide rolls, deckle rolls and apron are removed. A truck of approximately the same length as the wet end of the machine at a distance somewhat greater than the width of the wire, the platform of the truck being approximately on the same level as the lower set of rolls in the sub-frame. A series of planks, or the like, are placed with one end resting on the truck and the other in the bite of the opposed sets of rolls. The weight of the frame is lifted from the removable blocks by means of jacks, the new wire is draped over the planks, other planks are laid on the top of the wire, the jacks are lowered till the upper rolls rest on the top planks and are then removed, the motor driving the rolls is started up, and the wire is fed sideways into the machine until it is in proper operating position, the frame is again lifted off the planks, the blocks are replaced in proper position, the table lowered down on to them, and the planks are removed. The front pedestal of the couch roll is also provided with an opening in which are placed a pair of rolls, and the wire is passed around the couch roll at the same time as it is placed in position around the table—A.P.-C.

Automatic Guide Roll for Fourdrinier Wires. Walter Brecht and Erich Schaun. U. S. pat. 1,755,202, (April 22 1930). —The invention provides a device for automatically giving a slow, lateral, back and forth motion to the wire, so as to prevent grooving of the suction-box covers. A vertical nozzle is mounted near the edge of the wire, and below it is pivoted plate. The lever on which the plate is mounted is connected to the stem of a balanced valve by means of which water under pressure can be admitted to either end of a cylinder, the piston rod of which is connected to one of the bearings of the guide roll. When the water jet from the nozzle strikes the plate and depresses it, the balanced valve admits water into the cylinder so as to displace the guide-roll bearing in such a direction as to bring the wire towards the nozzle; as soon as the wire intercepts the water jet, a counterweight raises the plate and the balanced valve admits water under pressure into the opposite end of the cylinder, thus displacing the guide-roll bearing to restore the wire to its original position.—A.P.-C.

Removable-Fourdrinier Paper Machine. Charles B. Briede and Herman L. Kutter. U. S. pat. 1,757,291, (May 6, 1930).—The couch-roll bearings are carried by front and rear carriages, which are so constructed and mounted as to permit the couch roll to be moved forward out of its normal operating position. The front carriage is provided with anti-friction rollers adapted to roll on a suitable track on the paper machine room floor; the rear carriage is provided with a suspension arm having a roller bearing adapted to roll upon an elevated track, which can be drawn back to permit of stringing the new wire after the couch roll has been rolled out. In order to facilitate stringing the new wire into position, means are provided for suspending the rolled wire on a carriage which can travel along two cables parallel to and above the table, thus unrolling the wire and supporting it in position until the table has been moved back into operating position.—A.P.-C.

Suction Box for Board Machine. Edwin H. Streeter assignor to Wood Conversion Co. U. S. pat. 1,763,910, (June 17, 1930)—This is an improvement on Streeter's U. S. pat. 1,712,852, of (May 14, 1919).—According to the original patent, for the manufacture of board by flowing pulp at a consistency of 5 per cent on a fourdrinier wire which is passed through a hydraulic press to compact the pulp into a sheet of board, the travel of the wire is necessarily intermittent, and the flow-box is constructed and mounted so as to intermittently travel across the width of the wire while the latter is stationary during the pressing operation. According to the present invention, a suction box is provided immediately below the flow-box to remove a considerable portion of the water from the pulp before it is fed to the press, thereby reducing the amount of work which is done by the press and the time during which it must act on the pulp.—A.P.-C.

Removable Fourdrinier Paper Machine. A. Aldrich. U. S. pats. 1,761,183, 1,761,184 and 1,761,185, (June 3, 1930).—These three patents which were filed in 1923) deal with various features of the Beloit removable fourdrinier. According to *1,761,183* and *1,761,184*, the table is divided into two sections, one extending from the breast roll to near the suction boxes and the other from the suction-boxes to near couch roll, the two sections being joined by a pivoted connection. The breast roll end of the table may be elevated or lowered to adjust the pitch of the wire. The elevating and lowering mechanism is mounted on the frame supporting the feed box and is designed so that the feed box is tilted toward the table as it rises and is restored to level position as it falls. *No. 1,761,185* deals with the shaking mechanism. It comprises a series of upwardly extending reciprocatory or vitbratory members mounted on a rock-shaft, which is supported by bearings located on the floor so that the shaft is low and vibration is prevented. The upright members are connected with the table section by detachable connections permitting the table to be shaken as desired, and also permitting disconnection of the shaking mechanism to allow removal of the table in a direction away from the shaking mechanism for applying a new wire. The table-roll section of the table is mounted on flexible members, the lower ends of which are secured to channel irons forming the main frame of the table, so that the table rolls and wire thereon may be shaken without shaking the whole table structure. The breast roll is mounted

so that it can be connected to the shaking mechanism if desired, or can be left unshaken.—A.P.-C.

Deckle for Paper Machines. James W. Harris assignor to Paper Machy Corp. U. S. pat. 1,764,260, (June 17, 1930).—The stock is prevented from spreading over the wire beyond the width of the desired sheet by means of stationary deckles, preferably of rubber, which extend approximately one-third of the length from the breast roll to the suction boxes.—A.P.-C.

Wire Cloth for Paper Machines. J. Strachan and R. Marx. Eng. pat. 331,196, (Jan. 18, 1929).—Wire used for fourdrinier wires, dandy rolls cylinder mold coverings, etc., is plated with chromium, either alone or in combination or alloy with other metals such as titanium, molybdenum, or tungsten. The plating may be by electro-deposition, and the wire or the wire gauze being passed through a suitable chromium-plating solution between adjacent electrodes at a very slow rate of travel. A current of high amperage and low voltage is used, 1 ampers per sq. in. at 10 to 20 volts being suitable, and the anodes may be of lead or other suitable metal, tubular in form for the circulation of a cooling medium. The wire or web as it leaves the plating bath may be passed between wiping and polishing rollers. Wire or gauze of phosphor bronze, brass, or other alloy may be used, or steel wire or gauze where greater strength is required, and the chromium plating may be preceded by a plating with nickel.—A.P.-C.

Dandy Roll and Its Work. J. T. Bain. World's Paper Trade Rev. 93, 1182-1186 (March 28, 1930); Paper Mill 53, No. 20, 22, 24 (May 17, 1930).—A brief discussion of dandy roll troubles and the methods of overcoming or minimizing them.—A.P.-C.

Fourdrinier Wires. Joseph H. Low and Nelson Webb. Paper Mill 53, No. 22, 16, 56-60 (May 31, 1930); Pulp Paper Mag. Can. 30, 269-270, 273 (Sept. 4, 1930).—A brief exposition of recent progress in the manufacture of fourdrinier wires, more particularly as regards seaming.—A.P.-C.

Rolled Fourdrinier Wires. M. J. Mackay. Paper Mill 53, No. 14, 10 (April 5, 1930).—A brief exposition of their merits and their superiority over ordinary unrolled wires.—A.P.-C.

Suction Rolls. T. D. Nuttall. World's Paper Trade Rev. 93, 2292-2296 (June 20, 1930).—A brief outline of the development of the suction roll, with a discussion of its merits.—A.P.-C.

Crowning of Couch Press and Wet Press Rolls. Anon. Paper Maker & Brit. Paper Trade J. 80, 2-3, 13 (July 1, 1930).—The method of calculating the crowning of press rolls is explained. When the sheet dries unevenly across its width, regrinding of the press rolls should not be resorted to until all other possible causes of the trouble have been investigated and found absent or corrected.—A.P.-C.

New Suction Press Felt. J. W. M. Jamieson. Pulp Paper Mag. Can. 29, 533 (April 17, 1930),—A brief description of the new two-ply press felt designed and manufactured by Penmans, Ltd., St. Hyacinthe, Que., and discussion of its merits.—A.P.-C.

Paper Makers' Felts. William U. Hanke. Paper Mill 53, No. 19, 14, 16, 30, 32 (May 10, 1930).—A description of the care required in the selection of wool for paper machine felts and of the manufacture of such felts.—A.P.-C.

Suction Roll for Paper Machines. H. Banning, Eng. pat. 332,170.—In suction rolls having suction cells arranged parallel to the axis and opening outwards, the partitions have at their outer ends a breadth equal to or greater than the breadth of the aperture of the cell so that the cylinder can be used simultaneously as a suction cylinder and as a press-roll. The partitions increase in breadth towards their outer extremities and may be of T cross-section. The cells formed thereby retain the water therein until they have passed considerably beyond the horizontal plane through the axis of the cylinder.—A.P.-C.

Compensating Press Roll Drives. Ray Gleason. Paper Mill 53, No. 44, 12, 30 (Nov. 1, 1930).—In the compensating press roll drive the top press roll is provided with a gear through which the roll is driven by friction. A flanged member is batted into the journal of the top press roll. To this is fitted, with a running fit, a gear finished at both sides. Special composition rings are inserted between the sides of the gear and the flanges, and an adjustable spring pressure is applied against the outer flange and is exerted upon the face of the gear through the special composition rings in the same manner as a friction clutch. The slippage thus takes place in the gear instead of between the top and bottom press rolls. In practice it has been found to decrease felt costs, increase production (through a decrease in the number of breaks and speeding up of the machine) and reduce steam costs.—A.P.-C.

Deckling Device for Paper Machines. Wilfrid J. Rivard. U. S. pat. 1,761,051, (June 3, 1930).—Deckle-edges are produced on the sheet by means of freely rotating rolls at a point between the first and last presses. The device comprises a series of rolls mounted on a shaft extending transversely across the machine, preferably at a point about 3 to 6 inches above the first guide-roll encountered by the paper after it has been picked up by the last-press felt. The rolls may be of various cross section, but is beveled at the circumference, and the circumference is preferably knurled so as to get a better grip on the paper and insure evenness of rotation and deckling action. If a series of rolls are used between the edges of the paper, the paper is cut into a number of strips, each with deckle edges.—A.P.-C.

Sulphite Process

Device for Automatically Limiting the Pressure in Digesters. Raymond Fournier. Papeterie 52, 1045-1053 (Sept. 10, 1930).—A recent French patent provides a safety valve for pulp digesters consisting essentially of a barometric U-tube filled with mercury. The drawbacks of this device, including the large quantity of mercury required, are brought out. They have been overcome by making the connection to the digester of rather large cross section, which is closed by a perforated metal plate. On the side of the plate opposite to the digester is a flexible diaphragm (*e.g.*, of rubber), which is normally pressed against the plate by a mercury column which may be of very much smaller cross section than the pipe which is connected to the digester. When the pressure in the digester rises above the maximum permissible, the diaphragm is pushed away from the plate and steam can escape till the pressure has been reduced to the proper point.—A.P.-C.

Explosion of a Sulphite Digester at Lancey, December 24, 1927.—Anon. Industrie Papetiere 8, 327-331 (Oct. 1929); 9, 11-17, 51, 53, 93, 95 (Jan.-March, 1930).—A detailed account of the investigation following the explosion of a 100 cu. m. digester at the Papeteries de France, which killed 5 men and injured 6 others. The exact cause of the accident was not discovered, but it was shown that the action of the acid-proof brick lining could increase threefold use effects of the internal pressure, and that owing to the dimensions of the digester the metal was working above its elastic limit resulting in rapid fatigue and ultimate cold-hardening.—A.P.-C.

Problems in Sulphite. John O. Hanson. Paper Mill 53, No. 41, 22-23 (Oct. 11, 1930).—A brief discussion of some of the problems encountered in sulphite manufacture.—A.P.-C.

Sodium Sulphite Recovery from Sulphite Waste Liquor. Pierre A. Barbou assignor to Societe Barbou et Cie. U. S. pat. 1,765,560, (June 24, 1930).—Waste liquor from the treatment of vegetable materials with sodium sulphite solutions is treated with sulphuric acid, the sodium sulphite thus produced is made to react with calcium bisulphite and is then treated with a solution of caustic soda or of sodium carbonate. The organic substances precipitated by the addition of sulphuric acid are separated and destructively distilled. The liquor may be aërated before adding sulphuric acid in order to oxidize unchanged sulphite.—A.P.-C.

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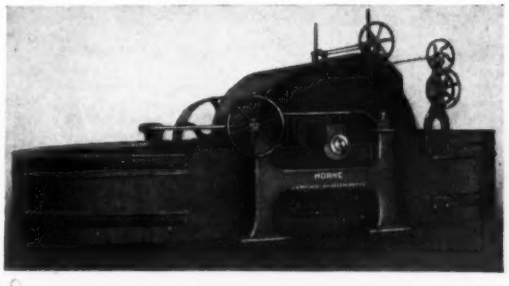

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IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING MARCH 21, 1931

SUMMARY

Cigarette paper	29 bls., 830 cs.
Wall paper	51 bls., 9 cs.
Paper hangings	2 cs.
News print	6241 rolls
Printing paper	68 cs.
Wrapping paper	10 cs.
Drawing paper	67 cs.
Filter paper	135 bls., 19 cs.
Surface coated paper	56 cs.
Metal coated paper	1 cs.
Coated paper	4 cs.
Photo paper	18 cs.
Tissue paper	1 bl., 9 cs.
Envelopes	21 cs.
Note paper	1 cs.
Writing paper	16 cs.
Carbon paper	1 cs.
Bristol paper	5 rolls, 19 cs.
Card board boxes	14 cs.
Miscellaneous paper	54 rolls, 5 bls., 56 cs.

CIGARETTE PAPER

Max Speigel & Son, Pres. Hayes, Genoa, 29 bls.
P. J. Schwietzer, Pres. Hayes, Marseilles, 60 cs.
Champagne Paper Corp., Lorain, Havre, 406 cs.
De Manduit Paper Corp., Lorain, Havre, 362 cs.
F. C. Strype, Augustus, Genoa, 2 cs.

WALL PAPER

W. H. S. Lloyd & Co., American Farmer, London, 51 bls., 4 cs.
A. L. Diament & Co., Aquitania, Southampton, 2 cs.
Thomas & Pierson, Aquitania, Southampton, 3 cs.

PAPER HANGINGS

Whiting & Patterson Co., Inc., Aquitania, Southampton, 2 cs.

NEWS PRINT

Jay Madden Corp., Genl. Von Steuben, Bremen, 301 rolls.
Perkins Goodwin & Co., Genl. Von Steuben, Bremen, 468 rolls.
A. S. Zabriskie, Pr. Harding, Hamburg, 68 rolls.
Parsons & Whittemore, Inc., Pr. Harding, Hamburg, 142 rolls.
W. H. Bell, Markland, Liverpool, N. S., 4955 rolls.
Lunham & Reeve, Hjelmaren, Hango, 307 rolls.

PRINTING PAPER

C. Steiner, Genl. Von Steuben, Bremen, 17 cs.
Keuffel & Esser, Pr. Harding, Hamburg, 17 cs.
P. C. Zuhlke, Pennland, Antwerp, 24 cs.
Defiance Sales Corp., Lorain, Havre, 10 cs.

WRAPPING PAPER

C. Steiner, Genl. Von Steuben, Bremen, 1 cs.
H. Reeve Angel & Co., Inc., Pennland, Antwerp, 4 cs.
Yardley & Co., Port Campbell, London, 5 cs.

DRAWING PAPER

Keuffel & Esser, Pr. Harding, Hamburg, 60 cs.
H. Reeve Angel & Co., Inc., American Farmer, London, 7 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., American Farmer, London, 10 cs.
A. Giese & Son, Aquitania, Southampton, 73 bls.
H. Reeve Angel & Co., Inc., Aquitania, Southampton, 9 cs., 62 bls.

SURFACE COATED PAPER

Gevaert Co., of America, Pennland, Antwerp, 56 cs.

METAL COATED PAPER

W. Wolff & Co., H. Jaspar, Antwerp, 1 cs.

COATED PAPER

W. A. Foster & Co., Port Campbell, London, 4 cs.

PHOTO PAPER

Globe Shipping Co., Pennland, Antwerp, 18 cs.

TISSUE PAPER

Quality Art Novelty Co., Genl. Von Steuben, Bremen, 1 bl.
F. C. Strype, Scythia, Liverpool, 3 cs.
F. C. Strype, Augustus, Genoa, 6 cs.

ENVELOPES

J. Beckhard, Genl. Von Steuben, Bremen, 21 cs.

NOTE PAPER

H. Reeve Angel & Co., Inc., American Farmer, London, 1 cs.

WRITING PAPER

Guibout Freres, Aquitania, Southampton, 3 cs.
Abraham & Strauss, Lorain, Havre, 13 cs.

CARBON PAPER

W. A. Foster & Co., Port Campbell, London, 1 cs.

BRISTOL PAPER

——, Pennland, Antwerp, 19 cs., 5 rolls.

CARD BOARD BOXES

P. Seguin, Pres. Hayes, Marseilles, 4 cs.
J. E. Bernard & Co., Aquitania, Southampton, 10 cs.

MISCELLANEOUS PAPER

P. J. Schweitzer, Aquitania, Southampton, 4 cs.
——, Pr. Harding, Hamburg, 54 rolls.
C. H. Boulin, Lafayette, Havre, 6 cs.
Globe Shipping Co., Lafayette, Havre, 1 cs.
Standard Products Corp., Lafayette, Havre, 38 cs.
R. Hudnut, Lafayette, Havre, 5 cs.
Schmidt & Pritchard, Lafayette, Havre, 5 bls.
Keller Dorian Paper Co., Lafayette, Havre, 2 cs.

RAGS, BAGGINGS, ETC.

A. W. Fenton, Inc., Genl. Von Steuben, Bremen, 71 bls. rags.
Int'l Acceptance Bank, Genl. Von Steuben, Bremen, 50 bls. rags.
International Purchasing Co., Pr. Harding, Hamburg, 105 bls. bagging.
Amtorg Trading Corp., Pr. Harding, Hamburg, 556 bls. rags.
Banco Coml. Italiane Trust Co., Pr. Harding, Hamburg, 30 bls. rags.
1st National Bank of Boston, Pr. Harding, Hamburg, 28 bls. threadwaste.
Baring Bros. & Co., Pr. Harding, Hamburg, 16 bls. threadwaste.
Castle & Overton, Inc., Innoko, Antwerp, 85 bls. bagging.
Katzenstein & Keene, Inc., Innoko, Antwerp, 313 bls. rags.
E. J. Keller Co., Inc., Innoko, ——, 62 bls. bagging.
Draper & Co., Scythia, Liverpool, 26 bls, rags.
J. Cohen Son Co., Inc., Scythia, Liverpool, 46 bls. rags.
J. Cohen Son Co., Inc., Port Campbell, London, 30 bls. paperstock.
V. Galaup, Lorain, Dunkirk, 71 bls. rags.
Baring Bros. Inc., Hoxie, Londonderry, 140 bls. paperstock.
Castle & Overton, Inc., Capulin, Dundee, 98 bls. bagging.
E. Butterworth & Co., Inc., Tagliamento, Genoa, 130 bls. bagging.
Banco Coml Italiane Trust Co., Tagliamento, Naples, 108 bls. bagging.
S. Birkenstein & Sons, Cabo Pales, Valencia, 47 bls. rags.

OLD ROPE

International Purchasing Co., Exchange, Genoa, 170 coils.
Brown Bros., & Co., Cristobal Colon, Coruna, 40 coils.

CASEIN

A Hurst & Co., Western World, B. Ayres, 417 bags.
A. Hurst & Co., Southern Cross, B. Ayres, 417 bags.

CHINA CLAY

Whitaker Clark & Daniels, Inc., Scythia, Liverpool, 64 casks.
Whitaker Clark & Daniels, Inc., Hoxie, Bristol, 325 bags.

WOOD PULP

Atterbury Bros., Inc., Genl. Von Steuben, Bremen, 300 bls. wood pulp.
E. J. Keller Co., Inc., Pr. Harding, ——, 370 bls. wood pulp, 51 tons
Atterbury Bros., Inc., Fred. VIII, Oslo, 150 bls. chemical pulp, 25 tons.
Lagerloef Trading Co., City of Fairbury, Hango, 140 bls. sulphate, 28 tons; 1606 bls. sulphite, 272 tons.
Lagerloef Trading Co., Hjelmaren, Hango, 227 bls. wood pulp.
M. Gottesman & Co., Inc., Alberta, Sebenico, 2720 bls. wood pulp.

WOOD PULP BOARD

Lagerloef Trading Co., City of Fairbury, Hango, 200 bls., 30 tons.
Lagerloef Trading Co., Hjelmaren, Hango, 142 rolls, 76 bls.

BALTIMORE IMPORTS

WEEK ENDING MARCH 21, 1931

Russel McCandless, Lagaholm, Stockholm, 750 bls. unbleached sulphite.

PHILADELPHIA IMPORTS

WEEK ENDING MARCH 21, 1931

Castle & Overton, Inc., Innoko, Antwerp, 164 bls. rags.
Katzenstein & Keene, Inc., Innoko, Antwerp, 159 bls. rags.
E. J. Keller Co., Inc., Innoko, ——, 70 bls. rags.
Lagerloef Trading Co., City of Fairbury, Hango, 7785 bls. sulphite, 1466 tons.
O'Neill Bros., Lorain, Havre, 20 bls. rags.
Castle & Overton, Inc., Lorain, Havre, 25 bls. rags.
V. Galaup, Lorain, Havre, 32 bls. rags.
J. M. Hagy Waste Works, Lorain, Dunkirk, 25 bls. rags.
Union Waste Co., Lorain, Dunkirk, 25 bls. rags.
Castle & Overton, Inc., Lorain, Dunkirk, 65 bls. rags.
Baring Bros. & Co., London Exchange, London, 55 bls. rags.
International Trust Co., London Exchange, London, 106 coils old rope.
E. J. Keller Co., Inc., Hesperides, ——, 330 bls. rags.
J. W. Hampton Jr. & Co., Hjelmaren, Hango, 213 rolls news print.
Lagerloef Trading Co., Hjelmaren, Hango, 4128 bls. wood pulp; 818 bls. wood pulp boards.
Brown Bros. & Co., Capulin, Leith, 53 coils old rope.
Bank of New York & Trust Co., Cabo Palos, Valencia, 73 bls. rags.
——, Alberta, Trieste, 115 bls. rags.
Guaranty Trust Co., Alberta, Venice, 61 bls. rags.
E. J. Keller Co., Inc., Sacandaga, ——, 314 bls. rags.

BOSTON IMPORTS

WEEK ENDING MARCH 21, 1931

——, City of Victoria, Port Alice, B. C., 8360 bls. wood pulp.
E. Butterworth & Co., Inc., Innoko, Antwerp, 147 bls. flax waste.
Spaulding Fiber Co., Innoko, Antwerp, 475 bls. flax waste.

(Continued on page 66)

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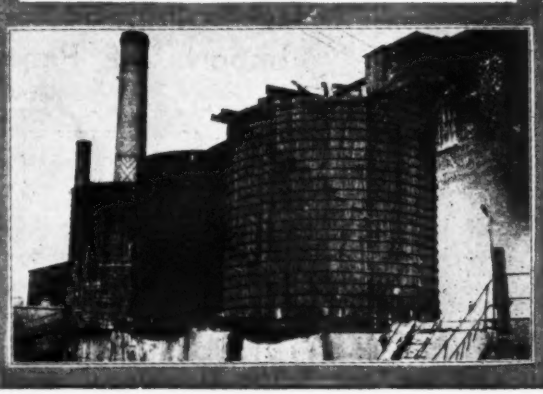


CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

New Hope, Pa.—The Union Mills Paper Manufacturing Company has been carrying out an expansion program at its local Universal bag mill, including the installation of additional equipment for the production of a new patented cement bag, designed to be filled mechanically through a self-closing valve. A new bag-making machine has been included in the program, which will represent a cost of close to $100,000. The plant will have a capacity of 80,000 bag units per day. It is expected to add to the working force at once, comprising from 20 to 25 men. At a later date, it is proposed to increase the capacity of the new bag unit, or as soon as demand warrants.

Bloomingdale, N. J.—John A. Farrel, Boonton avenue, Butler, N. J., manufacturer f paper boxes and containers, has disposed of his property to the American Hard Rubber Company, with mill on adjoining site, for an expansion program at that plant. The Farrel plant will be removed to Bloomingdale, where property has been secured at Hamburg Turnpike and Reeve Avenue. The existing structure will be remodeled and improved to accommodate the new business. It is expected to remove the machinery from the Butler factory at an early date to the new location. It is understood that former capacity will be increased at Bloomingdale and that other modernization work will be carried out.

Providence, R. I.—The Jencks Paper Box Manufacturing Company, Providence, recently formed with capital of $300,000, to take over and operate the Jencks Paper Box Company, with local plant at 45 Waldo street, has arranged for a change of name to the Jencks Manufacturing Company.

Whitehall, N. Y.—The Pretoned Wallboard Corporation, recently organized, has taken over Plant No. 2, of the former Champlain Silk Mills, on East Boardman street, and will remodel and equip for a new plant for the manufacture of wallboard products under a special process. The new company is capitalized at $125,000, and plans to begin operations at an early date.

New Orleans, La.—The Luffa Fiber Corporation, American Bank Building, New Orleans, Edward Ledecke, president, is projecting plans for the cultivation of a tract of about 50 acres of land with luffa vine, to be used as a source of raw material for production of fiber products. At a later date, the company proposes to construct and operate a mill for manufacture of such specialties, on a site near the cultivation tract.

Lambertville, N. J.—The Mann Paper and Pulp Company has operations under way on its new local mill, comprising a former plant for paper manufacture on South Main street, an interest of the William Mann Paper Company, idle for a number of months. Present production is now on a reduced basis but will be increased in the near future. Walter Cochran is one of the heads of the new organization.

Waterloo, Iowa—Fire, March 17, damaged a portion of the storage and distributing plant of the Waterloo Waste Paper Packing Company. An official estimate of loss has not been announced. The damage will be replaced at an early date.

Bristol, Va.—The Columbian Paper Company, Buena Vista. Va., has awarded a general building contract to the Fiske-Carter Construction Company, Greenville, S. C., for the proposed new boiler plant at its local mill, as well as for other building improvements at the plant. Work will be placed under way at once. The boiler plant will be one-story, 48 x 85 feet, and is estimated to cost over $60,000, with equipment. The W. E. Biggs Engineering Company, Holston Bank Building, Knoxville, Tenn., is engineer for the work.

Terre Haute, Ind.—Fire recently damaged a quantity of raw material at the plant of the Terre Haute Paper Company, north mills. An official estimate of loss has not been announced.

Skaneateles Falls, N. Y.—The Saxer Paper Mills, Skaneateles Falls, have arranged for a reduction in capitalization from $200,000 to $50,000.

Albany, N. Y.—The Peerless Paper Products Corporation, Albany, has filed notice of increase in capital from $30,000 to $100,000, for expansion.

Imports of Paper and Paper Stock

(Continued from page 64)

Lindemann & Co., Innoko, Antwerp, 43 bls. cotton waste.

2nd Natl. Bank of Boston, Innoko, Antwerp, 12 bls. thread waste.

Cordingley & Co., Innoko, Antwerp, 7 bls. thread waste.

Forte Dupee Sawyer Co., Innoko, Antwerp, 5 bls. thread waste.

National Shawmut Bank, Innoko, Antwerp, 21 bls. thread waste.

1st Natl. Bank of Boston, Innoko, Antwerp, 10 bls. thread waste.

American Express Co., Innoko, Antwerp, 3 cs. wall paper.

G. F. Malcolm & Co., Scythia, Liverpool, 10 cs. tissue paper.

Stone & Downer, Scythia, Liverpool, 1 cs. tissue paper.

Irving Trust Co., Lorain, Havre, 46 bls. string waste.

T. D. Downing & Co., Lorain, Havre, 11 bls. rags.

Hollingsworth Vose Co., Lorain, Havre, 108 bls. bagging.

International Trust Co., Lorain, Havre, 100 bls. bagging.

J. Anderson & Co., Hjelmaren, Gothenburg, 1500 bls. sulphite.

Parsons & Whittemore, Inc., Hjelmaren, Hango, 614 bls. wood pulp.

Lagerloef Trading Co., Hjelmaren, Hango, 2809 bls. sulphate; 4054 bls. sulphite.

Bulkley Dunton & Co., Hjelmaren, ——, 2500 bls. wood pulp.

T. D. Downing & Co., Maryland, London, 36 bls. rags.

1st National Bank of Boston, Maryland, London, 13 bls. rags.

Brown Bros. Harriman & Co., Maryland, London, 67 bls. waste paper.

M. Gottesman & Co., Inc., Alberta, Sebenico, 4660 bls. wood pulp.

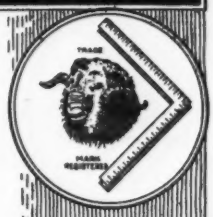
PORTLAND, ME., IMPORTS

WEEK ENDING MARCH 21, 1931

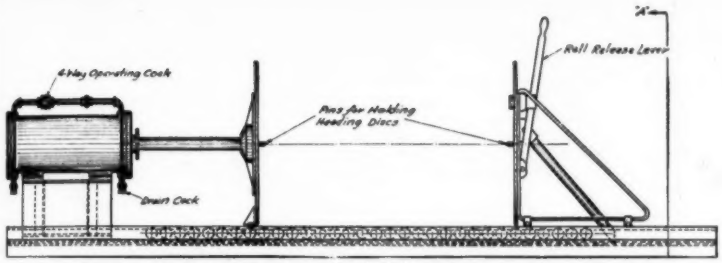
——, City of Victoria, Port Alice, B. C., 8360 bls. wood pulp.

3 FEATURES of our "TOP FELTS for BOARD MACHINES"

A Trial Felt for Your Machines Will Prove These Facts.



THE WATERBURY FELT CO., SKANEATELES FALLS, N.Y.



The MURRAY Header

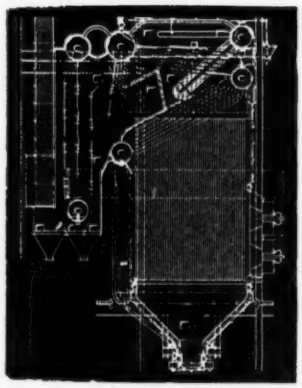
THE illustration shows the Murray Heading Machine as supplied *without scale*. With scale equipment, heading and weighing is one simple operation, eliminating needless and costly handling.

This simple, versatile machine will turn out uniform, perfectly headed rolls at a fraction of the cost of hand heading; no tipping of rolls on end.

It makes neater rolls and gives your customers a better impression at first sight.

The Murray Heading Machine can be supplied for use as:
(1) a plain heading machine only. (See illustration above).
(2) a heading machine mounted directly on scale as a unit.
(3) a plain heading machine mounted on a scale—all on a transfer car, to service more than one paper machine (as desired by some).
(4) a heading machine only on car, or
(5) any conceivable combination of units, to suit almost any range of diameters and lengths.

D. J. MURRAY MANUFACTURING COMPANY
WAUSAU WISCONSIN



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installed in some of the largest pulp and paper mills in the United States and Canada

MAXIMUM STEAM
AT
HIGHEST EFFICIENCY
WITH
LEAST CAPITAL INVESTMENT and OPERATING COSTS

Result:—Enormous savings in cost of pulp and paper produced.

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BASEX
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Replacement in All Makes
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ZEOLITE WATER SOFTENERS
Send for Leaflet A and Sample
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In sizes 6" to 24" in diameter and lengths to 40 feet.

NAYLOR PIPE COMPANY
CHICAGO, ILL.
Sales Offices: New York - Philadelphia - Tulsa - Houston - Ft. Worth

New York Market Review

Office of the PAPER TRADE JOURNAL.
Wednesday, March 25, 1931.

Conditions in the local paper market were fairly satisfactory during the past week. Demand for the various standard grades was moderately persistent. Supplies continue to go forward into consumption in a normal manner. Sales forces of the leading paper houses are still making strenuous efforts to book new orders. Prices are holding to formerly quoted levels, in most instances.

The news print situation is practically unchanged. Production in the United States and Canada is being maintained at about 60 per cent of rated capacity. Shipments against contract are fairly heavy considering the prevailing business depression. No further developments in the consolidation negotiations have been reported of late.

Demand for the various grades of paper board shows signs of improvement. Box board output is practically regulated to consumption. Prices are somewhat steadier. The fine paper market continues to exhibit a strong undertone, with prices generally holding to schedule. Tissues are moving in seasonal volume. The coarse paper market is irregular, although wrapping paper is moving in better volume.

Mechanical Pulp

Steadiness prevails in the ground wood market. While demand for imported and domestic mechanical pulp is only moderately active, offerings are not excessive, due to curtailed production in this country and abroad, and the industry is in a sound statistical position. There are a fair number of inquiries for future needs around. Prices remain unaltered.

Chemical Pulp

No radical changes were reported in the chemical pulp market. The Norwegian pulp mill workers strike is not expected to change the situation materially, due to the small amount of pulp imported from Norway. Actual American imports of Norwegian pulp during 1930 were only 41,000 tons of bleached sulphite, 23,000 tons of unbleached sulphite and 15,000 tons of kraft.

Old Rope and Bagging

Most of the business transacted in the old rope market during the past week was along routine lines. Both domestic and foreign old manila rope are only in light demand at present. Small mixed rope is moving in fair volume. The bagging market was rather spotty. Gunny is moderately active. Scrap bagging is dull. The roofing grades are arousing more interest, however.

Rags

The domestic rag market was quiet. Cotton rags were only in light demand. Roofing grades, however, were somewhat firmer, with offerings rather limited. Mixed rags are moving in moderate volume. Prices are nominal. The imported rag market continues dull, with the exception of the roofing grades which are in better request than for some time past.

Waste Paper

Paper mill interest in the waste paper market is more in evidence than of late. The lower grades are in improved demand from the board mill. Strictly folded news and mixed paper are showing signs of firmness. The higher grades of paper stock are steady. Soft white and hard white shavings are holding up well. Book stock and old kraft are in better request.

Twine

With the approach of Easter the local twine market is becoming more active. Demand for the various grades is expanding and the outlook for the immediate future, at least, is promising. Prices are generally being maintained at previously quoted levels, despite keen competition for desirable business.

WASTE MATERIAL DEALERS MEET

(Continued from page 13)

to A. G. Becker & Co., who gave an interesting talk on "The Outlook for Prices, Production and Profit." Dr. Friday has, for the past five years, devoted his entire time to financial investigation and administration, spending about one-third of this time in Europe studying the industrial situation there.

The economist's discussion centered around the conviction that the period of business revival we have entered will continue and that the paradoxical condition of lower prices, greater profits, and an improved bond market will obtain. "For manufactured products the price trend will certainly be still lower during the coming months," said Dr. Friday. "They have fallen less than raw materials and their costs have declined in a marked degree. Under these conditions they will compete vigorously for business and in the process reduce prices still further. The same holds true in even greater measure for mercantile establishments and retail prices. It is probable that there will be an improvement in the prices of raw materials; they have fallen much more than the finished products."

General Business Meeting

At the annual meeting held at the Congress Hotel on Wednesday, March 18, Carlton B. Overton, of Castle & Overton, Inc., New York, was re-elected president for the ensuing year. George Birkenstein, of S. Birkenstein & Sons was elected first vice-president; Robert Phillips, of E. I. Du Pont de Nemours Company, second vice-president, and J. A. Katz, of the American Metal Company, third vice-president. Charles M. Haskins was re-elected secretary-treasurer.

John A. Weiner Gets Patent

[FROM OUR REGULAR CORRESPONDENT]

OSWEGO, N. Y., March 23, 1931—A patent on a machine for producing wood pulp has been granted to John A. Weiner, of this city, who filed application on April 12, 1929. He has assigned his rights to the Oswego Board Corporation. John A. Frost has also been granted a patent on a dispensing cabinet for use with paper towels and his invention was assigned to the National Paper Products Co.

The United States patent departments has also issued a patent to Alfred C. Coty and Thomas E. Coty, officials of the Coty Bag Company, Watertown, covering their machine for making bags. The invention comprises mechanisms for closing the ends of tubular blanks which are turned out of the machine as bags. Application for patent was made on August 30, 1929.

Union Screen Plate Company

Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

UNION BRONZE

SCREEN PLATES FOR FLAT SCREENS

6 SLOTS—5 SLOTS—4½ SLOTS—4 SLOTS—PER INCH

Old Plates Reclosed and Re-cut to Accurate Gauge
Rolled Phosphor Bronze and Copper Plates for Rotary Screens

Sole Manufacturers of the Union Witham Screen Plate Vat and Fastener

87 YEARS EXPERIENCE

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DRYER FELTS

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PULP AND PAPER

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Special felts to meet every condition.
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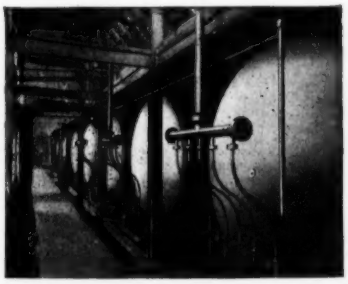

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MONARCH METAL COMPANY

Established 1895

119 South Lincoln Street CHICAGO

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL.
Wednesday, March 25, 1931.

BLANC FIXE.—The blanc fixe market was fairly active during the past week. Shipments against contract were normal. Prices generally remain unchanged. The pulp is quoted at from $42.50 to $45.00 per ton, while the powder is selling at from 3¾ cents to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—Steadiness prevailed in the bleaching powder market. The contract movement was well up to average for this time of year. Prices are holding to previously quoted levels without difficulty. Bleaching powder is selling at from $2.00 to $2.35 per 100 pounds, in drums, at works.

CASEIN.—The casein market continued quiet. There were no radical price changes. Domestic standard ground is quoted at 8½ cents and finely ground at 11½ cents per pound. Argentine standard ground is selling at 10 cents and finely ground at 11 cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Demand for caustic soda was moderately persistent. The contract movement is fairly satisfactory. Prices remain unchanged. Solid caustic soda is quoted at from $2.50 to $2.55; while the flake and the ground are selling at from $2.90 to $2.95 per 100 pounds, in large drums, at works.

CHINA CLAY.—Most of the business transacted in the china clay market was routine. Contract shipments are going forward in good volume. Prices remain unchanged. Imported china clay is quoted at from $13 to $21 per ton, while domestic paper making clay is selling at from $8 to $13 per ton, at mine.

CHLORINE.—Some improvement was noticed in the chlorine market. Production is being maintained in sufficient volume to take care of current requirements. The contract movement is normal. Prices are steady. Chlorine is quoted at $2.50 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is exhibiting a strong undertone. Prices are firmer. The grades of gum rosin in the paper mills are now quoted at from $5.90 to $6.35 per 280 pounds, in barrels, at yards. Wood rosin is selling at $4.40 per 280 pounds, in car lots, at southern shipping points.

SALT CAKE.—Conditions in the salt cake market are satisfactory. Demand is more active than of late. Prices are generally holding to schedule. Salt cake is quoted at from $16 to $17; German salt cake at from $15.50 to $16.00; and chrome salt cake at from $14 to $15 per ton, in bulk, at works.

SODA ASH.—The soda ash market was rather quiet during the past week. Shipments against contract are going forward to the mills in fair volume. Prices remain unchanged. Contract quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.00; in bags, $1.15; and in barrels, $1.38.

STARCH.—The position of the starch market is practically unchanged. Contract shipments are moving at a steady pace for the season. Prices are holding to recently quoted levels, without difficulty. Special paper making starch is selling at $2.67, in bags; and at $2.94 per 100 pounds, in barrels.

SULPHATE OF ALUMINA.—Supplies of sulphate of alumina are going forward in good volume. Demand is fairly persistent. Prices are steady and unchanged. Commercial grades are quoted at from $1.25 to $1.40; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is in a sound position. Prices continue steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton for any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Offerings of talc are sufficient to take care of current requirements. Demand from the paper mills is fairly satisfactory. Prices remain unchanged. Domestic talc is quoted at from $16 to $18 per ton, in bulk; while imported talc is selling at from $18 to $22 per ton, in bags, ship side.

Market Quotations

Paper
(F. o. b. Mill)

Ledgers	11.00	@	38.00
Bonds	6.75	@	53.25
Writings—			
Extra Superfine	14.00	@	32.00
Superfine	14.00	@	32.00
Tub sized	10.00	@	15.00
Engine sized	6.75	@	11.00
Book, Cased—			
S. & S. C.	5.50	@	—
M. F.	5.25	@	—
Coated and Enamel	7.00	@	10.50
Lithograph	7.50	@	12.00
Tissues—Per Ream—			
White No. 1	.65	@	.67½
Anti-Tarnish M G only	.65	@	.70
Colored	.70	@	.90
White No. 2	.55	@	.57½
Kraft	.65	@	.70
Manila	.55	@	.57½
Kraft—			
No. 1 Domestic	4.25	@	5.38
No. 2 Domestic	3.00	@	3.75
Southern	3.00	@	3.75
Imported	6.00	@	7.00
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.09¾	@	—
No. 2	.11¼	@	—
Bleached, basis 20 lbs.	.11¾	@	—
(Delivered New York)			
News, per ton—			
Rolls, contract	62.00	@	—
Rolls, spot	62.00	@	—
Sheets	67.00	@	—
Side Runs	47.00	@	52.00
Boards—per ton—			
News	30.00	@	32.00
Straw	40.00	@	45.00
Chip	30.00	@	32.00
Binders' Boards	65.00	@	70.00
Standard 85 Test Liner	35.00	@	40.00
Sgl. Mla. Ll. Chip. (F. o. b. Mill)	42.50	@	—
Wood Pulp Boards	70.00	@	80.00

Mechanical Pulp
(On Dock)

No. 1 Imported—			
Moist	28.00	@	32.00
Dry	30.00	@	34.00
(F. o. b. Mill)			
No. 1 Domestic	28.00	@	34.00

Chemical Pulp
(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	2.60	@	4.25
Easy Bleaching	2.25	@	2.40
No. 1 strong unbleached	2.00	@	2.35
Mitscherlich unbleached	2.10	@	2.70
No. 2 strong unbleached	1.90	@	2.00
No. 1 Kraft	1.40	@	1.75
No. 2 Kraft	1.35	@	1.55
Sulphate—			
Bleached	2.75	@	3.25
(F. o. b. Pulp Mill)			
Sulphite (Domestic)—			
Bleached	2.40	@	4.75
Easy Bleaching Sulphite	2.55	@	2.75
News Sulphite	1.80	@	2.50
Mitscherlich	2.50	@	3.25
Kraft (Domestic)	1.60	@	2.75
Delivered Paper Mills)			
Soda Bleached	3.00	@	—

Domestic Rags
New Rags
(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	8.00	@	8.50
New White, No. 2	7.00	@	7.25
Silesias No. 1	6.00	@	6.50
New Unbleached	8.00	@	8.50
New Blue Prints	5.00	@	5.50
New Soft Blacks	4.00	@	4.30
Blue Overall	6.00	@	6.25
Washables	3.75	@	4.00
Fancy	4.00	@	4.50
Mixed Khaki Cuttings	4.25	@	5.25
Pink Corset Cuttings	6.50	@	7.00
O. D. Khaki Cuttings	5.15	@	5.75
Men's Corduroy	3.00	@	3.50
New Mixed Blacks	3.00	@	3.25
Old Rags			
White, No. 1—			
Repacked	5.25	@	5.75
Miscellaneous	4.25	@	4.75
White, No. 2—			
Repacked	3.00	@	3.50
Miscellaneous	2.30	@	2.50
St. Soiled, White	1.50	@	1.75
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.65	@	1.85
Black Stockings	3.25	@	3.75
Roofing Rags—			
Cloth Strippings	1.25	@	1.30
No. 1	1.25	@	1.30
No. 2	.90	@	1.00
No. 3	.70	@	.80
No. 4	.65	@	.70
No. 5A	.50	@	.60

Foreign Rags
New Rags

New Dark Cuttings	2.15	@	2.40
New Mixed Cuttings	2.25	@	2.50
New Light Silesias	5.75	@	6.25
Light Flannelettes	6.25	@	6.75
Unbleached Cuttings	7.50	@	8.00
New White Cuttings	7.25	@	7.75
New Light Oxfords	5.75	@	6.25
New Light Prints	4.25	@	4.75
Old Rags			
No. 1 White Linens	7.00	@	7.50
No. 2 White Linens	5.50	@	6.00
No. 3 White Linens	4.00	@	4.50
No. 4 White Linens	2.50	@	3.00
No. 1 White Cotton	5.00	@	5.50
No. 2 White Cotton	4.00	@	4.50
No. 3 White Cotton	2.75	@	3.75
No. 4 White Cotton	1.60	@	1.75
Extra Light Prints	2.50	@	2.75
Ord. Light Prints	2.10	@	2.25
Med. Light Prints	1.65	@	1.75
Dutch Blue Cottons	1.90	@	2.10
French Blue Linens	2.65	@	2.75
German Blue Linens	2.25	@	2.40
German Blue Cottons	1.75	@	1.85
Checks and Blues	1.60	@	1.75
Lindsay Garments	1.10	@	1.20
Dark Cottons	.80	@	.90
Old Shopperies	.75	@	.80
New Shopperies	.75	@	.80
French Blues	1.80	@	1.90

Old Rope and Bagging
(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.65	@	1.80
Domestic	1.65	@	1.80
Wool Tares, light	1.30	@	1.40
Wool Tares, heavy	1.35	@	1.40
Bright Bagging	1.30	@	1.35
Small Mixed Rope	.90	@	1.00
Manila Rope—			
Foreign	2.05	@	2.25
Domestic	2.20	@	2.25
New Burlap Cut	2.25	@	2.50
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers
(F. o. b. New York)

Shavings—			
Hard, white, No. 1	2.75	@	2.85
Hard White, No. 2	2.30	@	2.40
Soft, white, No. 1	2.50	@	2.60
White envelope cuttings	2.95	@	3.05
Flat Stock—			
Stitchless	.90	@	1.00
Overissue Mag.	.90	@	1.00
Solid Flat Book	.75	@	.85
Crumpled No. 1	.60	@	.70
Solid Book Ledger	1.90	@	2.00
Ledger Stock	.80	@	.90
New B. B. Chips	.20	@	.30
Manilas—			
New Env. Cut	2.00	@	2.20
New Cuttings	1.50	@	1.65
Extra No. 1 old	1.25	@	1.35
Print	.50	@	.60
Bogus Wrapper	.50	@	.60
Container	.25	@	.30
Old Kraft Machine—			
Compressed bales	1.20	@	1.30
News—			
No. 1 White News	1.70	@	1.80
Strictly Overissue	.40	@	.45
Strictly Folded	.30	@	.35
No. 1 Mixed Paper	.15	@	.20
Common Paper		Nominal	

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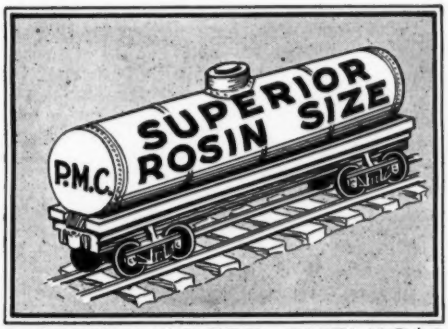

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RAGS—BURLAP—BAGGING—ROPE

JUTE BUTTS, MAGAZINES, CATALOGS, OLD PAPERS, THREAD WASTE AND ALL GRADE OF RAGS CUT QUICKLY AND EFFICIENTLY WITH THE

GIANT The Standard of the World for 59 Years

Giant Rag Cutters have capacities of from 1 to 5 tons per hour

This is the GIANT 3-B CUTTER WITH A CAPACITY OF 3000 lbs. PER HOUR

TAYLOR, STILES & COMPANY, Riegelsville, N. J., U. S. A.

CANADIAN REPRESENTATIVES Waterous, Limited Brantford, Ont., Canada

133-39 Finsbury Pavement, London, E. C. R. J. MARX SOLE AGENTS FOR EUROPE

Twines
(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.32	@	.34
No. 1	.22	@	.24
No. 2	.21	@	.22
No. 3	.19	@	.20
A. Italian, 18 basis	.38	@	.39
Finished Jute—			
Dark 18 basis	.20½	@	.21
Light 18 basis	.22½	@	—
Jute Wrapping, 3-6 Ply—			
No. 1	.14¼	@	—
No. 2	.13¼	@	—
Tube Rope—			
4-ply and larger	.10¼	@	—
Fine Tube Rope—			
4-ply	.12¾	@	—
3-ply	.13¾	@	—
2-ply	.14¾	@	—
Paper Makers Twine Balls	.08¾	@	—
Box Twine, 2-3 ply	.09	@	.10
Jute Rope	.11	@	.12
Amer. Hemp, 6	.29	@	.31
Java Sisal			
No. 1 Basis	.12	@	—
No. 2 Basis	.11¾	@	—
New Zealand Sisal	.11½	@	—
Sisal Lath Yarn—			
No. 1	.14	@	.16
No. 2	.12	@	.14
Manila Twine	.22½	@	.24½

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	5.00	@	5.50
Southern Kraft	3.75	@	4.00
No. 2 Kraft	3.75	@	4.00
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.07	@	.07¾
White Tissue	.07¼	@	.07½
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	62.00	@	—
Sheets	67.00	@	—
Boards, per ton—			
Plain Chip	30.00	@	35.00
Solid News	32.50	@	37.50
Manila Lined Chip	40.00	@	45.00
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.35	@	2.40
White Env. Cuttings	—	@	—
No. 1 Soft Shavings	2.10	@	2.15
Ledger & Writings	.70	@	.75
Solid Books	.75	@	.80
Blanks	1.60	@	1.65
Krafts	1.25	@	1.35
New Kraft Cuts	1.35	@	1.45
Manila Env. Cuts	1.50	@	1.55
Ex. No. 1 Manila	1.25	@	1.30
Print Manila	.40	@	.45
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.35	@	.40
No. 2	.30	@	.35
Mixed Papers—			
No. 1	.28	@	.30
No. 2	.20	@	.25
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.05	@	.40
Ledgers	.07	@	.40
Writings—			
Superfine	.12	@	.18
Extra fine	.16	@	.22
Fine	.15	@	.26
Fine, No. 2	.13½	@	.25
Fine, No. 3	.08½	@	.20
Book, M. F.	.05	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.08	@	.16
Coated Lithograph	.07	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.07	@	.09
Manila Sul., No. 1	.03¼	@	.05½
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03½	@	.04
Southern Kraft No. 1	—	@	.03¾
Southern Kraft No. 2	—	@	.03½
Common Bogus	.03	@	.04
(Delivered Philadelphia)			
News Print Rolls	62.00	@	—
Straw Board	50.00	@	—
News Board	32.50	@	—
Chip Board	30.00	@	—
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	75.00	@	—
No. 2, per ton	68.00	@	—
Carload lots	66.00	@	70.00
Tarred Felts—			
Regular	55.50	@	57.00
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.07	@	.08
New White, No. 2	.06	@	.06½
Light Silesias	.05½	@	.06
Silesias, No. 1	.07	@	.09
Black Silesias, soft	.05	@	—
New Unbleached	.07½	@	.08
Washable, No. 1	.03½	@	.04
Blue Overall	.06	@	—
Cottons—According to grades—			
Washable, No. 2	.02½	@	.03
New Blue	.02½	@	.03
Fancy	.04	@	—
New Black Soft	.04	@	.05
New Light Seconds	.02	@	.02½
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O. D.	.05	@	—
No. 2 Mixed	.04	@	.04¼
Corduroy	.02½	@	.03
New Canvas	.07½	@	.08
New Black Mixed	.03	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	3.50	@	4.00
Miscellaneous	3.00	@	3.50
M. G.	5.00	@	—
Thirds and Blues—			
Miscellaneous	1.50	@	1.75
Repacked	2.00	@	2.25
Black Stockings (Export)	3.80	@	4.00
Roofing Stock—			
Foreign No. 1	1.15	@	1.25
Repacked	.80	@	.90

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	2.75	@	3.00
Sisal Rope	1.25	@	1.50
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1, New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.60	@	2.65
No. 2 Hard White	2.30	@	2.35
No. 1 Soft White	2.25	@	2.50
No. 2 Soft White	1.40	@	1.60
No. 1 Mixed	.90	@	1.00
No. 2 Mixed	.60	@	.70
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.05	@	1.25
No. 1 Books, heavy	1.00	@	1.15
No. 2 Books, light	.90	@	.95
No. 1 New Manila	2.15	@	2.30
No. 1 Old Manila	1.50	@	1.60
Print Manila	.50	@	.60
Container Manila	.45	@	.50
Old Kraft	1.25	@	1.30
Common Paper	.25	@	.30
No. 1 Mixed Paper	.25	@	.30
Straw Board, Chip	.35	@	.40
Binders Board, Chip	.35	@	.45
Corrugated Board	.50	@	.60
Overissue News	.40	@	.45
Old Newspaper	.25	@	.30

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.12½
Rag Content	.15	@	.30
All Rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¼	@	.05½
No. 2 Kraft	0.3½	@	.04¼
(F. o b. Boston)			
Southern Kraft	.03¼	@	.03½
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)			
Common Bogus	.02	@	.02¾
Delivered New England points			
News Print, rolls	61.50	@	—
Straw Board, rolls	.009	—	@52.50
Straw Board in Sheets, basis 35s to 70s	—	@	50.00
Filled News Board	32.50	@	—
Chip Board	30.00	@	—
Chip Board (Creasing)	32.50	@	—
Single Manila Lined Chip	45.00	@	—
Single White, Patent Coated News Board			
Bender, No. 1	60.00	@	75.00
Bender, No. 2	55.00	@	65.00
Wood Pulp Board	75.00	@	80.00
Binder Boards	67.50	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.25	@	3.75
No. 2 Hard White	2.60	@	2.90
No. 1 Soft White	2.25	@	2.40
No. 1 Mixed	.90	@	1.00
No. 2 Mixed	.60	@	.65
Solid Ledger Books	1.75	@	2.25
Overissue Ledger Stock	1.35	@	1.60
Mixed Ledgers	1.15	@	1.30
No. 1 Books, heavy	.80	@	1.00
No. 1 Books, light	.55	@	.70
Crumpled Stitchless Book Stock	1.00	@	1.25
Manila Env. Cuttings	1.85	@	2.00
No. 1 Old Manila	—	@	1.00
White Blank News	1.50	@	1.60
Kraft No. 1	—	@	1.10
Manila	.80	@	.90
No. 1 Mixed Paper	—	@	.16
Overissue News	—	@	.40
Old Newspapers	.25	@	.30
Box Board, Chip	.16	@	.20
Corrugated Boxes	.35	@	.40

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	—	@	1.80
Domestic	1.60	@	—
Manila Rope—			
Foreign	2.25	@	—
Domestic	2.50	@	—
Transmission Rope	1.75	@	—
Mixed Strings	—	@	.70
Jute Rope	—	@	1.05
Jute Carpet Threads	.90	@	1.05
Bleachery Burlap	—	@	3.25
No. 1 Scrap Burlap	—	@	1.25
Scrap Sisal	1.35	@	1.40
Scrap Sisal for shredding	—	@	1.50
Wool Tares, heavy	1.30	@	—
New Burlap Cutting	1.75	@	2.00
Australian Pouches	2.50	@	—
Heavy Baling Bagging	—	@	1.75
Paper Mill Bagging	—	@	.85
Bagging No. 2	.50	@	—
No. 1 Burlap	—	@	3.50

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.06½	@	.07
New White No. 2	—	@	.06
Silesias No. 1	.06	@	.06¼
New Unbleached	—	@	.08
Fancy	.04	@	.04½
Washable	.04	@	.04½
Cottons—According to grades			
Blue Overalls	.06¼	@	.06¾
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04¼
O. D. Khaki	.04½	@	.05
Corduroy	.03	@	.03½
New Canvas	.08	@	.08½

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	5.00	@	—
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.50	@	2.75
Thirds and Blues—			
Repacked	1.75	@	2.00
Miscellaneous	1.50	@	1.75
Black Stockings	3.25	@	3.50
Roofing Stock—			
No. 1	.75	@	.80
No. 2	.65	@	.70
No. 3	.50	@	.60
No. 4	—	@	.60

Foreign Rags
(F. o. b. Boston)

Dark Cottons	.75	@	.85
New No. 1 White Shirt Cuttings	7.75	@	8.00
Dutch Blues	—	@	1.80
New Checks & Blues	4.00	@	4.50
Old Fustians	1.65	@	1.75
Old Linsey Garments	.85	@	.95

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.09¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.09½	@	.10½
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (carloads)	7.12½	@	7.60
No. 2 M. F. (carloads)	6.90	@	7.35
No. 3 M. F. (carloads)	6.65	@	7.15
No. 1 S. C. (carloads	7.60	@	8.10
No. 2 S. C. (carloads	7.35	@	7.85
No. 3 S. C. (carloads	7.12½	@	7.60
No. 4 S. C. (carloads	5.95	@	6.40
No. 1 Coated and Litho	13.25	@	—
No. 2 Coated and Litho	12.25	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.50	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft No. 2	5.40	@	—
(Delivered Toronto)			
News, per ton—			
Rolls (contract)	61.50	@	62.00
Sheets	67.00	@	—

Pulp
(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleaching	50.00	@	—
Sulphite, news grade	70.00	@	—
Sulphite, bleached	72.50	@	75.00
Sulphate	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.80	@	—
Soft White	2.60	@	—
White Blk. News	1.50	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.10	@	—
Light and Crumpled Book Stock	1.20	@	—
Ledgers and Writings	—	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	.80	@	—
Kraft	1.90	@	—
News and Scrap—			
Strictly Overissue	.70	@	—
Strictly Folded	.70	@	—
No. 1 Mixed Paper	.60	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09½	@	.10
Fancy Shirt Cuttings	.06	@	.06¾

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for
HIGH GRADE PAPERS

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NATIONAL ALIZARINE SAPPHIRE BNP

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FIFTY-NINTH YEAR

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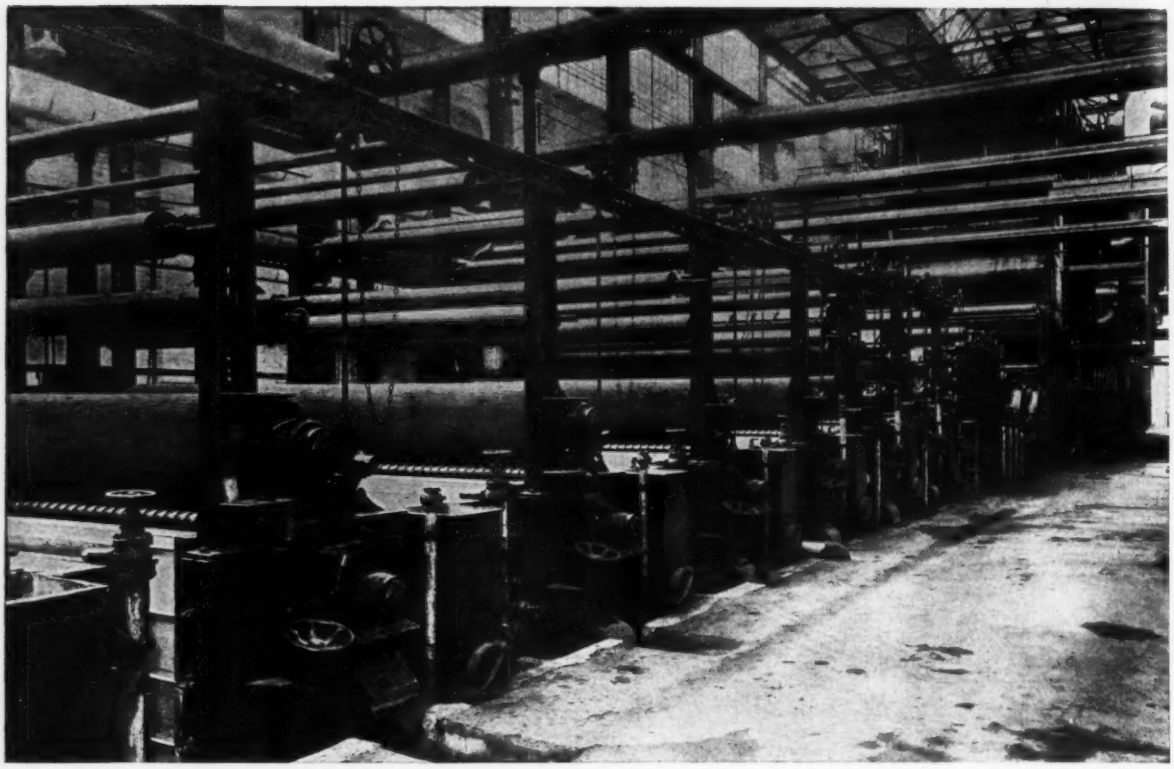

164-inch seven cylinder paper machine in Manayunk mill of Container Corporation of America. To save floor space, the Dryer rolls are arranged in three groups, the second and third being above the first.

Is Your Equipment Modern?

MOORE & WHITE influence in the field of paper making machinery is shown not only by the number of Fourdrinier and Cylinder paper machines now in service, bearing the M & W nameplate, but by the numerous accessory devices originated or improved by M & W, and now regarded as standard.

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- Fourdrinier
- Cylinder

Drum Winders
- 2-drum type
- 4-drum type

Rewinders

Slitter Parts
Lay Boys
Cutters
Backstands
"Criss Cross" Showers

Other specialties for paper making

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Established 1885

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